A STUDY OF THE RARE BIRDS OF AFRICA

BY

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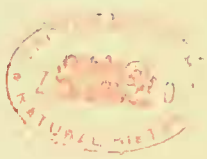

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By B. P. HALL & R. E. MOREAU

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INTRODUCTION

THE latest comprehensive list of birds of the Ethiopian Region, that of Sclater (1924–30), gives about 1,700 species of land-birds (most of them polytypic) as resident on the continent of Africa south of the Sahara ; and of these about one-fifth are mentioned as known only from the type locality or from a very limited area. Although since 1930 further collecting has shown many of these birds to be more common and/or widespread, and taxonomic study has reduced a number to the status of subspecies (or synonyms), enough apparently rare species remain to provide a striking contrast with, for example, the Palaearctic Region and hence to present in Africa an evolutionary problem that merits discussion. To put this in perspective it is useful to recall that the area of Africa south of the Sahara amounts to about eight million square miles. Moreover, since the Secondary epoch it has not been subjected to any extensive invasion or dissection by the sea and has carried the same climatic belts as the present, particularly the equatorial rainbelt, flanked on each side by a belt of savanna climate (with a long dry season), though not necessarily in exactly the locations they now occupy (Moreau, 1952).

It is necessary at the outset to determine what limits to apply for purposes of discussion ; and in the nature of the case they have to be arbitrary. After some trials we have decided to deal with all those species occurring on the African mainland which appear in Sclater's list (together with those subsequently described) as known from a range, whether discontinuous or not, that does not extend more than 250 miles in any direction. This means that the greatest possible area within the scope of this discussion would be 250 miles each way. Even this, though slightly larger

than England and Wales, represents less than 1% of the area of the Ethiopian Region ; but, as will appear from the discussion below, nearly all the species known to be strictly localized prove on examination to be confined individually to areas of less than 3,000 square miles, about 0·04% of the land surface south of the Sahara (and about the size of Kent and Sussex combined).

If we apply these criteria strictly we find that 333 of Sclater's " species " qualify for primary consideration and about a quarter of these still do so in the light of the latest information, both geographical and taxonomic. We have added 13 that merit special consideration, because they are known from very few specimens indeed, and/or are known from only two localities remote (more than 250 miles) from each other.

The selected 96 species are discussed individually in the following pages, and the remaining species are relegated to the appendix, with reasons there given. For each selected species we discuss whether the recorded range is likely to be extended by further exploration. Where the bird concerned lives exclusively in a certain vegetation type, especially montane evergreen forest,[1] an attempt has been made with the aid of large-scale contoured maps, from published statements, through correspondence and occasionally from personal knowledge, to assess the total area of suitable habitat. From the area occupied some idea can be formed of how many individuals such as restricted species may number at the present time.

While in selecting species for discussion an exact standard can be applied for the geographical limits, no such standard is possible in deciding whether certain populations, isolated from their nearest relatives, qualify as species (and therefore merit discussion) or as subspecies. The taxonomist's judgement of degree of relationship in birds that are not only fully allopatric (namely, those whose ranges do not overlap) but are also geographically isolated, is ultimately subjective, a personal assessment of whether, given the opportunity, the birds would freely interbreed. Moreover, his criteria may not be identical in all groups of birds. At one extreme, two birds can generally be accepted as conspecific when their differences are slight, especially when affecting only a single character. At the other extreme there is no difficulty in accepting as distinct species birds which, though obviously related, show such differences in size, proportions, colour, pattern, voice or behaviour that interbreeding would not be expected in nature whatever the opportunity. Between the two extremes there fall numerous doubtful cases in which check-list convention demands a yes-or-no decision which cannot in fact be respectably scientific. For our purpose we need not be bound by this, and in the case of 16 birds we thankfully take refuge in the means of evasion provided by Mayr (1942 : 165) when he proposed the term " semi-species " for those geographically isolated forms about whose status it is difficult to come to a decision.

We have also found it advantageous to use the concept of the superspecies, as

[1]As defined and mapped in the *Vegetation Map of Africa*, 1959 (Oxford Univ. Press). " In tropical Africa, evergreen forest above 1300 m. altitude usually differs from its lowland counterpart in floristic composition, in the abundance of epiphytic bryophytes and in the smaller height of the trees. *Olea, Ocotea, Juniperus, Podocarpus, Schefflera* and *Pittosporum* are among the many general characteristic of this type." For the occurrence of typical montane bird communities 1300 m., equivalent to 4,250 ft., is on the low side except on mountains very close to the sea. Inland the altitude of 5,000 ft. is more acceptable as the lower limit (cf. Chapin, **1** : 91).

redefined by Mayr *et al.* (1953 : 29)—" a monophyletic group of very closely related and largely or entirely allopatric species ". Again, the classification is to some extent subjective : " either the species, although completely isolated from each other, are morphologically as different as normally sympatric species, or they are in geographical contact without interbreeding or there is actually a slight distributional overlap ". Our " rare " species have been assigned to superspecies wherever it seemed appropriate to do so. It may be noted that, allopatry being a criterion for acceptance as semispecies, birds so classified are *ipso facto* regarded as members of superspecies.

Under specific headings in the systematic list critical papers are given in full but not listed in the bibliography, while references to the standard regional handbooks are quoted only with the author's name, volume and page number (e.g. Bannerman, **6** : 118) and full titles are listed in the bibliography. For convenience, the order and nomenclature used in our list are based primarily on Sclater, but modified to come more into line with those modern taxonomic conceptions which seem to be generally accepted.

We would emphasize that much of the detail in this study is provisional. Further exploration will increase some of the known ranges and further study modify some of the taxonomic judgements, but we believe that the main impressions will hold good.

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SYSTEMATIC LIST

The number in brackets in each specific heading refers to the number of that species on the accompanying map.

PHASIANIDAE—Pheasants and Francolins

Francolinus harwoodi (64)

Cheesman & Sclater, 1935, *Ibis* (13) **5** : 188. Praed & Grant, **1** : 244.

Known only from the type locality and the two places from which Cheesman obtained specimens, all of which lie within about a hundred miles on the Upper Blue Nile or its tributaries, in mountainous country south-east of Lake Tana (not " south-west " as given by Praed & Grant). If, as seems possible, the habitat of this species is the gorges of the river, its actual range must be very limited, but from Cheesman's remark that it was well known to the local people and prized for the table, its numbers may not be small.

F. harwoodi appears to be a member of the *natalensis/hildebrandti* group, which are birds often found in thick cover in rocky river valleys from Natal to central Kenya. The males of *harwoodi* look most like those of the southern *natalensis*, having a similar distinctive U-shaped pattern on the black-and-white feathers of the breast, differing from the plainer feathers of the East African *hildebrandti*. The females are not known, but when found it will be interesting to see whether, like those of *natalensis*, they resemble the males, or whether they have orange breasts like the female *hildebrandti*. The three species should be considered as members of a superspecies.

Francolinus camerunensis (65)

Bannerman, **1** : 332. Boulton & Rand, 1952, *Fieldiana Zool.* **34**: 39. Chapin, **1** : 710. Schouteden, **1** : 239.

Known from about a dozen specimens from the forest on Mount Cameroon between 5,000 and 7,000 ft., which would give it a range of less than 80 square miles. It is unlikely to occur elsewhere since Serle has not found it in similar habitat on neighbouring mountains where, however, there is no evidence that it is replaced by another species. (Schouteden has shown that the bird described as *Francolinus camerunensis ruandae* Saceghem, 1942, *Bull. Soc. Bot. Zool. Congol. Leopoldville*, **5** (1–2) : 18, is a specimen of *F. nobilis*.)

Chapin suggests that *F. camerunensis* may be allied to *F. nobilis* of the eastern Congo mountains and *F. jacksoni* of Kenya, which occupy the same ecological niche. To these we would add *F. castaneicollis*, *F. erckelii* and *F. ochropectus* of north-eastern Africa and *F. swierstrai* of Angola. While the differences in colour and pattern among these species are considerable each species has sufficient points of similarity with at least one of the others for us to regard them all as forming a superspecies. The male of *camerunensis* is closest to that of *nobilis*, both having red bills and legs and a patch of scarlet skin round the eye : both are plain, relatively unpatterned birds but whereas *camerunensis* is dark brown and grey, *nobilis* is a rich maroon chestnut on the mantle and underparts. Recent collecting by Boulton and by Serle

(awaiting publication) has confirmed that there is striking sexual dimorphism in *camerunensis*, the female being heavily patterned in brown, black and white. *F. swierstrai* (see below) also has marked sexual dimorphism and in most other members of the superspecies the females tend to be either duller or more vermiculated on the wings than the males.

Francolinus swierstrai (18)

Chaetopus swierstrai Roberts, 1929, *Ann. Trans. Mus.* **13** : 72—Mombolo, Cuanza Sul, Angola. Synonym *Francolinus cruzi* Themido, 1937, *Ext. Compt. Rend. 12th Congr. Int. Zool. Lisb.* 1935 : 1833—Hanha,[1] Benguela, Angola.

Heinrich, 1958, *J. Orn.* **99** : 322. White, 1945, *Ibis*, **87** : 466. Hall, 1960, *Bull. Brit. Mus. (Nat. Hist.) Zool.* **6** (7) : 407. Traylor, 1960, *Publ. Cult. Co. Diam. Ang. Lisboa*, **51** : 142.

Found in or on the edge of montane forest in the Bailundu highlands and on the Mombolo plateau, and in 1956 by Rudebeck (awaiting publication) in a patch of relict forest on the Chela escarpment 200 miles to the south. Much of the montane forest in Angola has recently been destroyed and suitable habitat is probably now limited to a few square miles on such peaks as Mount Moco and Mount Soque and even smaller patches on the higher parts of the escarpment.

F. swierstrai has a red bill and legs like *camerunensis*, *nobilis*, *jacksoni* and *castaneicollis* but has no red skin round the eye. The male, with its black-and-white underparts, is unlike any other of the montane francolins in the colour of the plumage, but is rather similar to *jacksoni* in pattern and has been noted to have a similar call. The female (on Traylor's description) differs from the male in being marked above with blotches and vermiculations and having a different pattern below. In these respects the sexual dimorphism is similar to that found in *F. camerunensis*, but Traylor (*in litt.*) tells us that the patterning of the two females is not very similar. In spite of the distance separating *swierstrai* from other members of the group we consider it part of the superspecies.

Francolinus jacksoni (46)

Jackson, 1938, **1** : 256. Praed & Grant, **1** : 254. Chapin, **1** : 710.

Found in the Kenya Highlands on both sides of the Rift : in the east on Mount Kenya and the Aberdares from the edges of forest and bamboo between 7,500 and 10,000 ft., in the west from the Mau (*Ibis*, 1915 : 19) at the southern end, and from the Cherenganis at the northern end (Williams *in litt.*). The area in which the species occurs may reach 5,000 sq. miles. Three subspecies have been described but verification with longer series is desirable.

F. jacksoni, with its plain chestnut-and-white feathers of the neck and underparts, reddish tail and red eyelids, is in some ways intermediate between *nobilis* of the East Congo mountains and *castaneicollis* of southern Abyssinia, and is closest to the western race of the latter, *F. c. kaffanus*. *F. nobilis* is a more richly pigmented and less patterned bird with a blackish tail and extensive bare skin round the eye, while

[1] We take this "Hanha" to be the locality on the escarpment (13° 18′ S., 14° 12′ E.) not the one in the environs of Benguela town, as assumed by Themido, where *F. swierstrai* is most unlikly to occur.

F. castaneicollis is heavily patterned with black, grey, chestnut and white (except in *F. c. atrifrons*), has a brown tail and apparently no red skin round the eye or on the eyelids.

Francolinus ochropectus (63)

Francolinus ochropectus Dorst & Jouanin, 1952, *Oiseau*, **22** : 71—Plateau du Day, Cercle de Tadjoura, French Somaliland.

Dorst & Jouanin, 1954, *Oiseau*, **24** : 161–170.

Known only from one area of forest above 3,500 ft., predominantly *Juniperus procera*, about 9 sq. miles in extent. In southern Abyssinia and in the Gadabursi Hills and the Golis Range of (British) Somaliland the juniper forests are occupied by *F. castaneicollis*, while in northern Abyssinia and Eritrea *F. erckelii* is the montane francolin, so it seems very likely that *ochropectus* is confined to the Plateau du Day.

F. ochropectus is closest to *F. erckelii*, having a similar blackish bill and yellow legs (unlike the other members of the superspecies). It has also similarities in the pattern of the feathers though differing strikingly in colour, being predominantly a grey bird with grey and dull orange markings, instead of a brown bird with rich chestnut markings. Nevertheless the relationship between the two seems closer than that between any other two members of the superspecies and it may be best to regard *ochropectus* as a semi-species.

Otididae—Bustards

Eupodotis humilis (60)

Archer & Godman, **2** : 350. Peters, **2** : 223.

The smallest of the African bustards, known definitely only from (British) Somaliland, where the extreme localities for specimens are Bulhar, on the west coast, and Bohotleh, 200 miles to the south-east, but there is no obvious ecological reason why it should be so restricted and Archer expected it would be found more widely in the semidesert to the south and east, which has hardly been explored ornithologically.

In appearance *E. humilis* is most like *E. vigorsii* and *E. rüppellii* of south-western Africa, and notwithstanding the difference in size and the distance intervening the three can be regarded as forming a superspecies.

Columbidae—Pigeons

Columba albinucha (51)

Van Someren, V. G. L. & G. R. C., 1949, *Uganda J.* **13**, spec. suppl. : 25. Goodwin, 1959, *Bull. Brit. Mus. (Nat. Hist.) Zool.* **6** (5) : 14.

A handsome pigeon known from nine or ten different localities in an area of lowland forest about 200 miles by 50 in the eastern Ituri district of the Congo and in the adjacent Bwamba district of Uganda, where it was common. It may well be found to have a wider range.

It was thought at one time to be a race of the widespread *C. arquatrix*, which it resembles in some respects of colour and pattern. The Van Somerens however found

the two birds together at Bwamba, where both fed in the lowland forests by day but *C. arquatrix* returned at night to higher ground. Since *arquatrix* is typically a highland bird it seems possible that the breeding ranges of these two pigeons do not actually overlap, but they must be in close proximity. In the circumstances, while they are evidently closely related, we, like Goodwin, regard the two as distinct species, but in view of the possible overlap not as members of the same superspecies. This view is open to revision if it is proved that the breeding ranges are segregated.

MUSOPHAGIDAE—Turacos

Tauraco ruspolii (58)

Benson, 1945, *Ibis*, **87** : 499. Moreau, 1958, *Ibis*, **100** : 107.

Known with certainty only from the isolated juniper woods above 6,000 ft. at Arero, where Benson found it. The locality at which the type was collected is not known but from the collector's route Moreau has shown that it also could well have come from Arero. The juniper woods at Arero are only about 10 sq. miles in extent, according to Benson (*in litt.*). From personal experience he believes the bird to be absent from the highland forests nearest to Arero to the west, namely at Mega, Yavello and Alghe. The most likely other place for *ruspolii* to be found seems to be a still smaller patch of juniper about 35 miles to the east of Arero, but the possibility cannot be excluded that it may be discovered somewhere to the north-east, if any suitable habitat occurs in the 200 miles of ornithologically unexplored country between Arero and Ginir (see *Ibis*, 1958 : 108).

T. ruspolii seems to be allopatric to *T. leucotis*, the species it most resembles, and the two could possibly be considered conspecific. There are, however, conspicuous differences in the colour of the crest, the pattern of the face and the eye-wattle, so that it is best considered at least a semi-species.

Tauraco bannermani (66)

Serle, 1950, *Ibis*, **92** : 357. Moreau, 1958, *Ibis*, **100** : 104.

Found only in the patchy montane forest of the Bamenda–Banso highlands above 6,000 ft., which probably, we estimate, does not exceed 200 sq. miles in all. It is a bird unlikely to be overlooked, and we think it improbable that it will yet be found elsewhere.

T. bannermani is generally very like *T. erythrolophus* of western Angola, over 1,000 miles away, but differs in shape and colour of the bill and the shape of the nostrils. We regard them as forming a superspecies.

STRIGIDAE—Owls

Phodilus prigoginei (86)

Phodilus prigoginei Schouteden, 1952, *Rev. Zool. Bot. Afr.* **46** : 424—Muusi, 2,430 m., highland north-west of Lake Tanganyika.

The genus *Phodilus* is known in Africa only from the type of *P. prigoginei*, which was collected in an unspecified habitat in a locality where typical montane forest

birds such as *Tauraco johnstoni* and *Pseudocalyptomena graueri* have been obtained. It may well occur on other mountains west of the Ruzizi valley, but even if so would have a range of less than 500 sq. miles.

The only other member of the genus, *P. badius*, covers a wide range in forests of Asia and Indonesia : *prigoginei* and *badius* differ surprisingly little, slightly in colour, in shape of bill and in size of the feet and claws. The two would be considered conspecific were it not for the immense distance separating them ; but in the circumstances *prigoginei* is regarded as a species, forming a superspecies with *badius*.

Bubo vosseleri (37)

Praed & Grant, **1** : 661. Peters, **4** : 118.

An eagle-owl known only from the type and another specimen " half-grown and still covered with nestling feathers, but certainly *B. vosseleri* " (Stresemann *in litt.*), also from Amani (3,000 ft.) in the East Usambara Mts. It must surely be a forest bird but, while nothing could be easier to overlook than an owl, Moreau and his African collectors in 18 years at Amani had no definite indication of this bird's existence. It may be added that it cannot now be ascertained where the information given by Praed & Grant on its food etc. came from (Praed *in litt.*), and there may perhaps have been some transposition of data.

On present evidence, *B. vosseleri* might be a bird of lowland forest, reaching its upper limits at Amani or a highland bird occupying one or both of the East and West Usambara massifs. In either case the bird's range would not exceed about 500 sq.miles at the outside.

Peters and Sclater both place *vosseleri* as a race of *B. poensis*, a forest species of West Africa and the northern Congo, the most easterly locality for which is 900 miles from Amani. The two birds differ somewhat in colour and pattern and Stresemann, who has kindly examined the specimens of *vosseleri* for us, considers that it should be kept as a species. It is perhaps best regarded as a semi-species.

Caprimulgidae—Nightjars

Caprimulgus binotatus (6)

Chapin, **2** : 432.

The type of this dark nightjar was collected at Dabocrom (" forested Gold Coast ", probably inland from Takoradi—see Chapin, **4** : 657) in 1850 but has only been found since by Bates' collectors 900 miles away in the forest of the Cameroons at Efulen, Metet and Bitye, in a triangle of about 400 sq. miles. All the five specimens there were found asleep during the day in tangled creeper. It is a bird that might well be present but undiscovered throughout much of the forest of western Africa, though unlikely to be common. On the other hand the timber-cutting in much of the Ghana forest may have exterminated the species there.

The rectrices of *C. binotatus* do not all lie in the same plane but those forming the two sides meet at an angle. This character has led Chapin and Peters to place the species in a monotypic genus, *Veles*. We agree with Bannerman and Sclater in not accepting this as a generic character.

APODIDAE—Swifts

Apus toulsoni (12)

Lack, 1956, *Ibis*, **98** : 39.

Known only from three specimens taken on the west coast of Africa at Landana and Luanda, 250 miles apart, but may be more common than is supposed since few swifts have been collected in Angola.

Lack, believing only two specimens were known, provisionally placed *toulsoni* as a race of *A. horus*, though suggesting it might be merely a mutation, since it differs only in having the rump the same colour as the back instead of white. A third specimen in New York (Traylor *in litt.*), also from Luanda, reduces the likelihood of *toulsoni* being a mutation. The difference between a white and a dark rump in swifts seems likely to be of more than subspecific importance, but if *toulsoni* is proved to have a breeding range allopatric to that of *horus* it could perhaps be considered an exceptionally well-marked subspecies. On the other hand both *horus* and *toulsoni* have been collected at Landana and if their breeding ranges overlap *toulsoni* must rank as a species. Provisionally we treat it as such.

CAPITONIDAE—Barbets

Lybius rubrifacies (47)

Chapin, **2** : 525.

A black-and-red barbet occupying an area about 100 miles square south and west of Lake Victoria, across the Uganda–Ruanda–Tanganyika borders. Pitman tells us that this is rather open country with euphorbia, acacia and figs, and therefore hardly to be regarded as ecologically peculiar. A hundred miles separate this area from the southern edge of the range of *L. guifsobalito* which inhabits rather richer, more wooded country north of the Kampala–Fort Portal road. The country in between has been little explored ornithologically and is, in Pitman's view, more suited to *rubrifacies*, which may therefore have a more extensive range—up to some 20,000 sq. miles.

The two birds are very alike, but *rubrifacies* has a paler bill and lacks the red throat and white-edged wing-coverts of *guifsobalito*. They may also have different calls, for Pitman has never heard in *rubrifacies* territory any call similar to the distinctive and penetrating call of *guifsobalito*. We think the two should be regarded as forming a superspecies.

Lybius chaplini (24)

Pitman, 1932, *Ibis* (13) **2** : 304. Benson & White, 1957 : 62.

A distinctive brown-and-white barbet with a red face found in an area 150 miles square between the Kafue River, Kalomo and Lusaka in central Northern Rhodesia. Pitman found it in woodlands, thickets and open cultivation. Benson (*in litt.*) tells us that it tends to inhabit more open country, and is perhaps more strictly confined to figs, than the common red-and-black barbet of the area *L. torquatus*, though both may be seen together. Their voices are quite distinct.

The relationship in eastern Africa between the brown-and-white barbets of the *leucocephalus* group and the predominantly black-and-red barbets of the *torquatus* and *guifsobalito/rubrifacies* group is too complex to discuss fully here. It is sufficient to say that since similar distinctive patterns and colours occur in forms of both groups there may have been interbreeding, resulting in hybrid populations that have become stabilized. *L. chaplini* appears to be one such. It is most like the *leucocephalus* group, in particular the Kenya white-bellied race *L. l. senex*, but has some red in the head and yellow edges to the wings and tail, which suggests the influence of *torquatus*. It is, however, separated by 800 miles from the main range of the *leucocephalus* group in the Iringa district of central Tanganyika, and by 900 miles from the isolated *L. leucocephalus leucogaster* at Quilengues in western Angola. A possible inference is that the brown-and-white birds were once more widespread south of the equator but have been invaded and overrun by the black-and-red birds, leaving an isolated brown-and-white population in western Angola, and a hybrid population in Northern Rhodesia which has developed into a full species.

INDICATORIDAE—Honey-guides

Indicator pumilio (87)

Indicator pumilio Chapin, 1958, *Bull. Brit. Orn. Cl.* **78** : 46—Tshibati, 6,400 ft., south-west side of L. Kivu, Congo.

A small honey-guide found in the mountains west of Lakes Edward and Kivu, in the Kivu volcanoes and south to Itombwe north-west of L. Tanganyika (Chapin *in litt.*). All the localities lie within a strip 200 miles by 80, of which not more than about 4,000 sq. miles provides suitable habitat.

It is found alongside *I. e. exilis*, which it resembles most closely in general colour and pattern, but which is larger and heavier, with a disproportionately larger bill. Chapin (1958 and **4** : 633) believes the small bill of *pumilio* may indicate relationship with the paler *meliphilus* of East Africa (which he shows should be regarded as specifically distinct from *exilis*) ; but he thinks the differences in colour are great enough to warrant regarding *pumilio* as a distinct species. These colour differences are, in fact, no greater than those between *I. conirostris* and *I. minor*, which are usually now regarded as conspecific, but whereas the darker coloration of *conirostris* and the paler of *minor* can be correlated with habitat in forest and more open country respectively, this seems not to be true of *pumilio* and *meliphilus*, for *meliphilus* has been recorded from forest, in Northern Rhodesia and Nyasaland, as well as from Brachystegia, in Nyasaland, and acacia, in Kenya (cf. Benson, 1953 : 45 ; Benson & White, 1957 : 65 ; Granvik, 1934 : 51). In the present state of knowledge of the ranges and relationships of *pumilio*, *exilis* and *meliphilus* it is impossible to designate a superspecies.

PICIDAE—Woodpeckers

Campethera tullbergi (67)

Serle, 1950, *Ibis*, **92** : 349, 366 ; 1954, *Ibis*, **96** : 60 ; 1957, *Ibis*, **99** : 417. Chapin, **2** : 568.

Known from montane forest on the Obudu plateau of Eastern Nigeria, Cameroon Mt., Kupé Mt., Rumpi Hills and the Bamenda–Banso highlands above 5,000 ft. but nowhere common, the total area inhabited probably not exceeding 350 sq. miles. (A dark specimen from Oku in the Banso highlands has been separated as *C. t. wellsi*, but see Serle, 1950.)

Chapin suggests that *C. tullbergi* is allied to *C. taeniolaema* of montane forest in the eastern Congo and East Africa. Indeed, with the upper parts indistinguishable, the two are more similar than are the little woodpeckers *cailliautii* and *permista*, respectively spotted and striped below, which are now known to interbreed (Chapin, 1952, *Ibis* : 535). Below, *taeniolaema* is heavily barred, while *tullbergi* has a spotted abdomen and fine vermiculations on the throat and chest, more pronounced in the female ; and since, unlike *cailliautii* and *permista*, they are separated by over 1,000 miles we regard them as semi-species at least.

Eurylaimidae—Broadbills

Pseudocalyptomena graueri (88)

Lowe, 1931, *Proc. Zool. Soc. Lond.* : 445–461. Schouteden, **6** : 7.

A green broadbill known only from three places in montane forest at about 6,500 ft. west of the Ruzizi valley, north of Lake Tanganyika. Its total area inhabited may well be under 2,500 sq. miles.

Lowe has shown that anatomically *Pseudocalyptomena* has diverged little from the oriental members of the family, to some of which it is more similar in plumage than to the other African genus of broadbills, *Smithornis*.

Alaudidae—Larks

Mirafra williamsi (55)

Mirafra williamsi Macdonald, 1956, *Bull. Brit. Orn. Cl.* **76** : 71—Marsabit, Kenya.

Discovered in " an overgrazed area " with sandy soil, some grass and small bushes near Marsabit and in the Didd Galgalla desert 36 miles to the north on black lava soil. It must be expected more widely in the semi-desert areas of north-eastern Kenya and Somaliland.

Macdonald found *williamsi* to be most like *M. cordofanica* of the southern edge of the Sahara, though it has a stouter bill and is dark brown and not sandy-rufous on the back. Further field observations are needed to establish its affinities.

Mirafra pulpa (54)

Mirafra pulpa Friedmann, 1960 (Apl.), *Occ. Pap. Bost. Soc. Nat. Hist.* **5** : 257—Sagon (= Sagan) R. at long. 37° 30″ E., Shoa, Ethiopia. (Synonym *Mirafra candida* Friedmann, 1930 (July), *Auk*, **47** : 418—Archer's Post, northern Guaso Nyiro R., Kenya.)

Praed & Grant, **2** : 46. White, 1960, *Bull. Brit. Orn. Cl.* **80** : 22. Hall, 1961, *Bull. Brit. Orn. Cl.* **81** : 108.

M. pulpa is provisionally regarded as a species, pending further investigation into the ecology and taxonomy of the larks of northern Kenya. It is known only from one specimen from the type locality, and one adult and two young birds from Archer's Post, 300 miles to the south. Like the preceding species, it may prove to have a wide range.

It has been considered by different authors as conspecific with *M. cantillans marginata* and with *M. williamsi*, both of which occur in the area between the two *pulpa* localities, *williamsi* in the more arid, and *cantillans* in the less arid districts. However Hall has shown there are differences in size and colour which indicate it is distinct from both other species.

Calandrella fringillaris (21)

Gyldenstolpe, 1927, *Arkiv. Zool.* **19** : 23 ; 1934, *Ibis*, (13) **4** : 291. Meinertzhagen, 1951, *Proc. Zool. Soc. Lond.* **121** : 89–100. MacLachlan & Liversidge, 1957 : 254.

Known only from two stations (Leeuw Spruit and Vredefort Road) on the main railway west and north-west of Heilbron, northern Orange Free State, and from 126 miles to the north-east in the Transvaal at Bethal and at Estancia (20 miles east of Bethal), where Prozesky has recently collected three males. He has provided the only field notes available on this lark (notes attributed to *Alauda fringillaris* prior to 1927 refer to *Mirafra passerina*—see Gyldenstolpe) which he found in small flocks of about ten birds on short-grass veld : they appeared dark in the field. Maps 1 and 2 in Acock's " Veld Types of South Africa " (1953, *Union of S. Afr. Dept. of Agric. Bot. Surv. Mem.* 28) suggest that the lark may be associated with the area of Sweet Grassveld in which these localities lie, and which now has a discontinuous distribution in the Transvaal but was formerly more widespread.

Botha's Lark bears a striking resemblance to *Calandrella* (*Spizocorys*) *c. conirostris*, the race of the Pink-billed Lark found in the Orange Free State and Transvaal. The male, female and immature bird (the type of *Botha difficilis*) of *C. fringillaris* in the British Museum, and the three males from Estancia, show that the two species differ chiefly in the legs and feet ; *fringillaris* has comparatively long legs (tarsus ♂ 21, ♀ 20 mm.) and a long hind claw, which is straight and stout for 10–15 mm. in the male and straight for 10 mm. in the female, tapering thereafter to a fine curved tip : the tarsus in *conirostris* is under 18 mm. and the hind claw short and curved. There is also a difference in the wing, that of *fringillaris* being longer (♂ 83–84, ♀ 81 mm.) with a well-developed first (outside) primary extending about 11 mm. beyond the coverts, whereas in *conirostris* the wing is under 80 mm. and there is no visible first primary. *C. fringillaris* is paler on the abdomen than birds of the eastern race of *conirostris* (though western races of *conirostris* are paler throughout) but matches in colour and pattern above, and in the tail. Both species have similar heavy, pink bills and are alike in immature plumage. (The young bird examined of *fringillaris* has a white throat as in the adult, contrary to the statement by McLachlan & Liversidge.) Meinertzhagen has shown that there are not sufficient grounds for recognizing either *Botha* or *Spizocorys* as distinct from *Calandrella* and with this we agree.

The other closely-related South African lark is the paler *Calandrella starkii* with a horn-coloured bill, which is sympatric with *C. conirostris* through much of the range of that species in the west but which does apparently extend eastwards as far as Heilbron or Bethal and may be replaced here by *C. fringillaris*. However since both *starkii* and *fringillaris* seem to be more closely related to *conirostris*, with which they are sympatric, than to each other, they cannot be regarded as forming a superspecies.

Calandrella obbiensis (59)

Meinertzhagen, 1951, *Proc. Zool. Soc. Lond.* **121** : 89–100. White, 1958, *Bull. Brit. Orn. Cl.* **78** : 80.

Known only from three specimens taken at Obbia and Mogadishu, 300 miles apart on the coast of Somalia, but likely to be more widespread and less rare than this would indicate.

It is a puzzling species, for which no field notes are available, and its generic associations are uncertain. Meinertzhagen included it provisionally with *Calandrella*, though noting that it had a longer first primary than others of that genus. No one seems to have discussed its status in relation to *Eremalauda dunni* of the Sahara and Arabian desert (which Meinertzhagen regards as an atypical *Ammomanes*). Though *obbiensis* and *dunni* differ in colour they have similar bills, first primaries and feet, except that *obbiensis* has a slightly longer and straighter hind claw. They may be related, but only further collecting and field data of *obbiensis* can resolve this.

Motacillidae—Wagtails and Pipits

Anthus sokokensis (38)

Sclater & Moreau, 1932, *Ibis* (13) **2** : 670. Moreau, 1940, *Ibis* (14) **4** : 456. Hall, 1961, *Bull. B.M. (Nat. Hist.) Zool.* **7** (5) : 281.

Known only from (*a*) the Sokoke forest on the coast north of Mombasa, (*b*) scrubby forest at Moa, 100 miles south along the coast, and (*c*) the Pugu forest (at about 1,000 ft.) west of Dar-es-Salaam, a further 120 miles south. It is not a typical forest bird but is found on the edges or in clearings of these coastal forests, which are of a poor type. Similar habitat occurs sporadically on this stretch of the coastal plain and perhaps may do so further south. It may well not now exceed an area of a few hundred square miles in all, but would have been more continuous in recent historical times before the coastal belt suffered from " development ".

The rich colour, blotchy markings on the throat and breast, and pointed rectrices make *A. sokokensis* look unlike any other pipit. Although it has points of size, structure and pattern in common with *A. caffer* (see Hall), in our view the two birds are too distinct to be treated as a superspecies.

Macronyx sharpei (45)

Jackson, **2** : 831. Praed & Grant, **2** : 78.

Common but very local on open grass and in cultivation between 7,000 and 8,000 ft. on either side of the Rift Valley in Kenya, but not apparently found on the neigh-

bouring mountains of Mt. Elgon and Mt. Kenya. Suitable habitat cannot cover more than half the 2,500 sq. miles which lie between the contours mentioned.

M. sharpei looks very like the widespread yellow-throated longclaw, *M. croceus*, which is typically a bird of lower altitudes. However, *M. sharpei* is more lemon-yellow below, with no continuous black collar on the breast, has different field characters and is smaller, which is the reverse of the rule within those species which show difference of size with altitude. Evidently it must be accepted as a species.

TIMALIIDAE—Babblers etc.

Turdoides hindei (44)

Van Someren, 1932, *Nov. Zool.* **37** : 338.

Apparently limited to an area of less than 2,500 sq. miles of broken savanna country in the eastern foothills of the east Kenya Highlands, approximately Fort Hall–Kitui–south Ukamba (Machakos). On the north and west *T. melanops* is recorded from within 40 miles at Nanyuki and Kikuyu.

The plumage of *hindei* is a mixture of sooty brown, white and rufous with exceptional individual variation, which naturally suggests hybrid origin. It is difficult to suggest, however, how the characters of *hindei* can have been arrived at by interbreeding between any of the other species of East African *Turdoides*, for none are as dark or have as much rufous in the plumage. In pattern and colour certain specimens of *hindei* suggest a close relationship with *T. leucopygia*, which occurs in much of eastern and central Africa but not in Kenya (in fact, not between southern Abyssinia and south-western Tanganyika), but the tail of *hindei* is somewhat longer than the wing, instead of shorter as in *leucopygia*. Of the Kenya species which seem closest, the brown-and-white, almost unpatterned *T. hypoleuca* also has a long tail, and occurs in the same country as *hindei*, while *melanops*, which *hindei* appears to replace, has something of the same scalloped pattern to the plumage but a short tail. There seems no alternative at present to regarding *hindei* as a species.

Lioptilus rufocinctus (89)

Chapin, **3** : 223. Schouteden, **6** : 133. Delacour, 1950, *Oiseau*, **20** : 189. Mayr, 1957, *J. Orn.* **98** : 29.

A montane forest babbler known only from seven localities between 5,500 and 9,000 ft. in the 200 miles from Lake Kivu to Mt. Kabobo, west of L. Tanganyika. The area inhabited is probably under 3,000 sq. miles.

Since *L. chapini* was discovered in 1949 in the Ituri district at about 4,600 ft. it has sometimes been considered conspecific with *rufocinctus*, although the birds differ in shape and colour of beak and *rufocinctus* has a distinctive black cap, without eye stripe. Now that Prigogine (1960, *Rev. Zool. Bot. Afr.* **61** : 16) has discovered a new form of *chapini* at 4,800 ft. in forest at Butokolo (28° 16′ E., 2° 42′ S.), south-west of L. Kivu, there is more reason to consider the two as distinct species, though they are not truly sympatric since they apparently live at different altitudes. We regard them as forming a superspecies with *L. gilberti* (see below).

Lioptilus gilberti (68)

Kupeornis gilberti Serle, 1949, *Bull. Brit. Orn. Cl.* **69** : 50—Kupé Mt. near Essusong, British Cameroons.

Serle, 1954, *Ibis*, **96** : 61 ; 1957, *Ibis*, **99** : 630. Mayr, 1957, *J. Orn.* **97** : 29.

Found between 4,000 and 6,000 ft. on Kupé Mt., the Rumpi Hills and the Obudu plateau over the Nigeria border, usually in primary forest, but occasionally in secondary. Neighbouring mountains with apparently suitable habitat have failed to produce this species, so that the total area it inhabits probably does not exceed 70 sq. miles.

L. gilberti was originally ascribed to a new genus, but the discovery of *Lioptilus* (*Kupeornis*) *chapini* later in the same year provided a link with *rufocinctus* and the three birds are now usually considered congeneric. *L. gilberti* is larger than *chapini* and the two differ in the colour and pattern of the throat and breast, but the shape and colour of bill and the colour and pattern of the crown and mantle are very alike.

Picathartes oreas (7)

Webb, 1949, *Avic. Mag.* **55** : 149. Delacour & Amadon, 1951, *Ibis*, **93** : 60–62. Serle, 1952, *Bull. Brit. Orn. Cl.* **72** : 2–6 ; 1954, *Ibis*, **96** : 72. Good, 1953, **2** : 27. Bannermann, **8** : 464.

Known only from a strip 200 miles long and between 20 and 90 miles from the sea, from Mamfe in the British Cameroons to the northern edge of Spanish Guinea. It builds under rocky overhangs in densest forest and suitable nesting sites must be very limited. It may occur further south and east in former French territory but all known localities are comprised in an area of 7,000 sq. miles.

It has differences in structure, colour and pattern from the only other member of the genus, *P. gymnocephalus*, which inhabits the West African forest, from Togoland to Sierra Leone. These peculiar birds have been considered variously as aberrant crows, starlings and babblers ; Bannerman gave the genus family status : Delacour & Amadon concluded that the Picathartes are aberrant babblers ; Serle, 1952, pointed out their similarities to the Malayan *Eupetes macrocercus* (itself of uncertain affinities) and on the basis of personal knowledge thought that the Picathartes should be kept " in or near the Corvidae ".

PYCNONOTIDAE—Bulbuls

Phyllastrephus orostruthus (28)

Phyllastrephus orostruthus Vincent, 1933, *Bull. Brit. Orn. Cl.* **53** : 133—Namuli Mt., Portuguese E. Africa.

Phyllastrephus orostruthus amani Sclater & Moreau, 1935, *Bull. Brit. Orn. Cl.* **56** : 16—Amani, Tanganyika.

Vincent, 1935, *Ibis* (13) **5** : 365.

The two patches of montane forest in which the only two known specimens of this bulbul have been collected are 700 miles apart. Even in these patches it is probably very uncommon, for it has a distinctive song which would not allow any great numbers to remain unobserved. It might still be found on other mountains with forest

patches, but it seems possible that it is a species which has been overrun by the widespread *P. fischeri*, the common *Phyllastrephus* of all types of East African forest. The forest islands in which *orostruthus* has been found total less than 100 sq. miles.

P. orostruthus is a very distinct species with no obvious affinities, the heavy, blotchy streaks on the breast distinguishing it from all other members of the genus.

Phyllastrephus poliocephalus (69)

Chapin, **3** : 173. Serle, 1950, *Ibis*, **92** : 360 ; 1954, *Ibis*, **96** : 63 ; 1957, *Ibis*, **99** : 634. Young, 1946, *Ibis*, **88** : 371.

A bulbul of montane forest apparently common on Mt. Kupé and the Rumpi hills and also found on Cameroon Mt. and the Obudu plateau, eastern Nigeria, but not on Manenguba Mt. or the Bamenda–Banso highlands. The area it inhabits may therefore not exceed 150 sq. miles.

Chapin suggested that *poliocephalus* might be considered conspecific with *flavostriatus* and *alfredi*, which occupy montane forests in southern and eastern Africa. The only outstanding difference in appearance is that *poliocephalus* has uniform bright yellow underparts instead of white with yellow streaks, as in the East African birds. But the song of *poliocephalus* as described by Young is so unlike that of *P. flavostriatus* (see *Ibis*, 1932 : 676) that the current treatment of the two as distinct species may be accepted. They should however be regarded as forming a superspecies.

Phyllastrephus poensis (70)

Serle, 1950, *Ibis*, **92** : 346, 373 ; 1954, *Ibis*, **96** : 63 ; 1957, *Ibis*, **99** : 635.

Found on most of the Cameroon highlands, on the Obudu plateau of Eastern Nigeria and on Fernando Po. Since its habitat is montane forest between 4,500 and 7,000 ft. the actual area it occupies is probably under 500 sq. miles.

P. poensis in the Cameroon highlands and *P. baumanni* of the forest to the west seem to take the place in West Africa of *P. fischeri*, which is widespread in the forests of east and central Africa. The three species look rather alike, though differing in the structure of the bill and the colour of the eye, and together form a superspecies.

Pycnonotus (Arizelocichla) montanus (71)

Serle, 1950, *Ibis*, **92** : 375 ; 1954, *Ibis*, **96** : 65. Chapin, **3** : 118. Peters, **9** : 251.

Only about a dozen specimens are known, from secondary forest and forest clearings above about 5,000 ft. on Cameroon Mt., Manenguba Mt., the Rumpi Hills and the Bamenda–Banso highlands. Serle found it uncommon and the area of suitable habitat probably does not exceed 300 sq. miles though it is possible that the bird may yet be found on the neighbouring Kupé Mt. or the Obudu plateau.

Chapin pointed out that *montanus* may be closely related to *masukuensis*, a bird of forest between about 3,000 and 7,000 ft. in the eastern Congo, Tanganyika and Nyasaland. The resemblance between *montanus* and nominate *P. masukuensis* of Nyasaland is indeed striking, though they differ slightly in the colour of underparts, the darkness of the bill and the stronger development of whiskers in *montanus*. It is perhaps best to consider *montanus* and *masukuensis* as semi-species.

MUSCICAPIDAE, MUSCICAPINAE—Flycatchers

Muscicapa lendu or ***Muscicapa itombwensis*** (90)

Alseonax lendu Chapin, 1932, *Amer. Mus. Nov.* **570** : 11—Djugu, west of L. Albert, Belgian Congo.

Muscicapa lendu itombwensis Prigogine, 1957, *Rev. Zool. Bot. Afr.* **55** : 406—Ibachilo, 28° 28′ E., 3° 45′ S., 5,700 ft., Itombwe, north-west of L. Tanganyika, Belgian Congo.

Chapin, **3** : 627. Schouteden, **7** : 383. Vaurie, 1953, *Bull. Amer. Mus. Nat. Hist.* **100** : 521.

The type of *lendu* was collected at about 5,500 ft. and regarded by Chapin as probably restricted to montane forest. Later collectors in the area have failed to find other specimens. This has led to doubts on the validity of the form, Vaurie believing it to be a hybrid between *M. olivascens* and *M. aquatica*, and Schouteden that it is an aberrant *olivascens*.

At two localities in montane forest 300 miles south of the type locality of *lendu* Prigogine has recently obtained six specimens that he has described as a subspecies of *lendu* although they differ quite strongly in bill structure. It is possible that no further evidence may ever be available on the status of *lendu*, for Prigogine reports that the forests in the Lake Albert area are being heavily reduced. We have not examined the type of *lendu* and have nothing to add to Prigogine's argument, but consider it might be best to regard *itombwensis* as an independent species for the present, rather than to attach it to *lendu*, which is of doubtful status.

Melaenornis ardesiaca (91)

Melaenornis ardesiaca Berlioz, 1936, *Bull. Mus. Hist. Nat. Paris*, **2** (8) : 329—Mbwahi west of L. Kivu, Belgian Congo.

Chapin, **3** : 617. Schouteden, **7** : 375. Prigogine, 1953, *Ann. Mus. Roy. Congo Belge*, **24** : 62. Williams, 1959, *Bull. Brit. Orn. Cl.* **79** : 51.

A flycatcher fairly common locally in woods, thickets or forest on the mountain slopes from west of Lake Edward to L. Tanganyika, and in extreme south-west Uganda at Kigezi. Its range is about 200 miles from north to south but since it is found only between 5,000 and 8,000 ft. the area inhabited may be less than 2,500 sq. miles.

Its plumage is blue-grey, in some ways intermediate between the shiny blue-black of the southern *M. pammelaina* and the dark sooty grey of the northern *M. edolioides*, both of which are birds of lower and more open country. It differs from them also in having a yellow eye (noted by Williams as very conspicuous in the field) not a brown eye, and is smaller but with a heavier bill. In both structure and habits *edolioides* and *pammelaina* seem closer to each other than to *ardesiaca*.

All three species of *Melaenornis* have been collected within 100 miles of each other in the area where Ruanda, Uganda and the Congo meet, but they seem mutually exclusive. We regard them as members of a superspecies.

Platysteira laticincta (72)

Serle, 1950, *Ibis*, **92** : 604.

A wattle-eye confined to montane forest above 5,000 ft. on the Bamenda highlands between Bamenda and Oku. At lower altitudes there, and on neighbouring mountains, its place is taken by *P. cyanea*. Species of both *Platysteira* and of the related genus *Batis* seem usually to be mutually exclusive and it is unlikely therefore that *laticincta* will be found outside this small area 50 × 20 sq. miles in extent, in which the total area it inhabits probably does not exceed 100 sq. miles.

P. laticincta is very like *P. peltata*, which is found in both montane and gallery forest in Angola, and in fringing forest and scrub widely over central and eastern Africa. *P. laticincta* differs only in being slightly smaller, with a disproportionately shorter tail, and shorter, wider bill, and in having a broader breast band in the male. In conjunction with the isolation of *laticincta* these differences lead us to class it as a semi-species.

(For notes on *Muscicapa gabela* see under Turdinae, and for *Chloropeta gracilirostris* see under Sylviinae.)

MUSCICAPIDAE, TURDINAE—Thrushes

Turdus ludoviciae (62)

Archer & Godman, 1961, **4** : 1137.

Confined to juniper forest on the mountains. It is fairly common in the Golis Range, in an area not exceeding 40 × 10 sq. miles, and also 200 miles to the east above Erigavo, in the juniper belt on the Warsangli Escarpment. Archer thinks it might possibly also be found in the juniper of the Gadabursi Hills behind Jiffa and Buramo, near the Abyssinian border, which are about 80 miles to the west of the known localities. Even if so the total area occupied would probably be well under 1,000 sq. miles.

T. ludovicae is a grey bird with a black-streaked throat. Its combination of dark plumage with vestigial orange in the under wing-coverts suggests it may be a link taxonomically, as to some extent it is geographically, between the African thrushes of the *T. olivaceus* or *T. libonyanus* groups and the Palaearctic and Indian blackbirds, *T. merula* and *T. simillima*.

Turdus helleri (42)

Bednall, 1958, *East Afr. Nat. Hist. Soc. Journ.* **99** : 17.

Collected only in montane forest above 5,000 ft. in the Teita Hills, southern Kenya, but also seen by Bednall on Kilimanjaro, 60 miles to the west, at about 6,500 ft. The avifauna of Kilimanjaro being comparatively well known, it is probable that the *helleri* seen was a straggler, in which case we can regard as its habitat only the forest on the Teita Hills, which according to the District Commissioner, Teita (per Myles North) does not exceed 1,000 acres (less than 2 sq. miles), made up of four patches.

T. helleri has sometimes been regarded as merely a melanistic subspecies of *T. olivaceus* but the blackness of its head, throat and breast, unlike all races of *olivaceus* in

both the intensity and distribution of the melanin, suggests that *helleri* has attained specific status. Furthermore North (*in litt.*) has reason to believe that it may have a very different song. If *helleri* is found to breed on Kilimanjaro the case for specific distinction is conclusive, since *T. o. deckeni* is also resident there.

Geokichla oberlaenderi (49)

Chapin, **3** : 577. Schouteden, **6** : 200.

The only published records of *G. oberlaenderi* are from lowland forest near Beni and Arebi in the north-eastern Congo, but it has also been obtained by Prigogine at Kakanda, west of the Ruzizi valley, 300 miles to the south (specimen in Tervuren). It may well be widespread, though rare, in the Congo forest.

G. oberlaenderi looks very like *G. c. crossleyi* of the Cameroon highlands and we would be prepared to treat them as conspecific were it not that the localities of *G. crossleyi pilettei* suggest that it may overlap *oberlaenderi* in the Beni area. Chapin points out that there is a possibility that *oberlaenderi* is the female and *pilettei* the male of the same species, though he considers it unlikely. Provisionally we regard *oberlaenderi* as a species.

Geokichla cameronensis (8)

Serle, 1950, *Ibis*, **92** : 607. Good, 1953, **2** : 60. Chapin, **3** : 576.

A thrush known from only four localities all within 50 miles of the coast, from Ndian in the British Cameroons to Doum and Grand Batanga 200 miles south. It is a bird of thick lowland forest and may possibly range further south and east.

The bird described by Sassi as *G. princei graueri* from the eastern Belgian Congo was transferred by Sclater to *cameronensis* but erroneously (Chapin). The two species *princei* and *cameronensis* have some resemblance in facial pattern but differ in size, proportions and colour and do not seem particularly closely related. We therefore regard *cameronensis* as a good species.

Cossypha isabellae (73)

Serle, 1950, *Ibis*, **92** : 346, 608 ; 1954, *Ibis*, **96** : 68 ; 1957, *Ibis*, **99** : 644.

Fairly common in the montane forest over 4,500 ft. on Mt. Cameroon (*C. i. isabellae*), Manenguba Mt., the Rumpi Hills, Bamenda–Banso highlands, and the Obudu plateau of Eastern Nigeria (*C. i. batesi* with a browner back). On Kupé and Fernando Po its place is taken by *C. bocagei granti* and *C. b. insulana*, so its range is unlikely to prove more extensive and the area the species inhabits must be under 350 sq. miles.

In the eastern Congo mountains *C. archeri* is the ecological parallel of *C. isabellae*, and is in many ways a similar bird, showing parallel subspecific variation. However *archeri* has a disproportionately longer tail and tarsus, and a finer bill with weaker bristles. There are also differences in the extent of the white in the plumage. We are satisfied that *isabellae* and *archeri* can be treated as distinct species, forming a superspecies which might also include *bocagei*.

Cossypha heinrichi (15)

Cossypha heinrichi Rand, 1955, *Fieldiana Zool.* **34** (31) : 327—Duque de Bragança, N. Angola.

Heinrich, 1958, *J. Orn.* **99** : 356.

Known only from the type locality, where it was found in the undergrowth of one strip of gallery forest bordering a small stream in savanna country at about 3,500 ft. Future exploration may be expected to show it has a wider range, most likely along some of the other west-flowing rivers of northern Angola.

C. heinrichi is distinguished from all other cossyphas by its pure white head and neck. Those which are nearest in this respect, *C. albicapilla* and *C. niveicapilla*, have the white confined to the crown and their backs black, not olive-grey as in *heinrichi*. We accept *C. heinrichi* as a species without close relatives.

Sheppardia gabela (14)

Muscicapa gabela Rand, 1957, *Fieldiana Zool.* **39** : 41—15 km. south of Gabela, Angola.

Heinrich, 1958, *J. Orn.* **99** : 128. Hall, 1961, *Bull. Brit. Orn. Cl.* **81** : 45. Da Rosa Pinto, 1960, *Bol. Cult. Mus. Angola*, **2** : 17.

Hall has shown reason to regard this newly discovered species as an akalat and not a flycatcher.

Heinrich and da Rosa Pinto (*in litt.*) found it to be very local in patches of secondary forest within 25 miles of Gabela. This forest forms part of the " coffee-forest " which lines the escarpment, and there are similar patches both to the north and south, though extensive planting is destroying much of the undergrowth, and suitable habitat for this bird may well be limited to a few hundred square miles.

In spite of the lack of orange coloration on the breast, *S. gabela* is very like *S. cyornithopsis* of the lower Cameroons, and might be regarded as a semi-species.

Alethe lowei (30)

Alethe lowei Grant & Praed, 1941, *Bull. Brit. Orn. Cl.* **61** : 61—8 miles south of Njombe (6,600 ft.) southern Tanganyika.

Lynes, 1934, *J. Orn. Sond.* : 82 (under *Sheppardia cyornithopsis*). Zimmer & Mayr, 1943, *Auk*, **60** : 256.

Known only from two specimens, the type, a female just coming into breeding condition, seen in the " forest-jungle ", and a male (in the Coryndon Museum) from the Uwemba forest (about ten miles south of the type locality). This akalat might be expected in any of the forest patches of the Southern Highlands block of Tanganyika, which total something like 1,000 sq. miles (cf. Gillman's *Vegetation Map of Tanganyika*, 1949).

In colour *A. lowei* is very like *Sheppardia sharpei*, differing only in having a more rufous and well-defined eye-stripe ; however, as Grant & Praed pointed out, it has stouter and darker feet, shorter and fewer rictal bristles, and a broader and longer first primary. The tarsi of the specimen we have examined are broken but, as far as

can be judged, they are also longer, about 27 mm. against 24 mm. The bill is also narrower than in most specimens of *sharpei*.

Grant & Praed believed *A. lowei* to be closest to *A. montana* of the Usambara Mts., which, though a larger bird with no dull orange on the underparts, matches well above, and has a similar pattern and colour on the head and face. Zimmer & Mayr, without being able to see the type, suggested that *lowei* was conspecific with *Alethe* (*Bessonornis*) *anomala* but this cannot be accepted. Apart from the marked and multiple differences in plumage the two species evidently occur together for, according to his labels, Lynes found both *lowei* and *A. a. grotei* in forest 8 miles south of Njombe (see further discussion under *A. montana* below). We feel obliged to treat both *lowei* and *montana* as distinct species (forming a superspecies) which provide links between *Alethe* and *Sheppardia* but are not typical of either.

Alethe montana (36)

Sclater & Moreau, 1933, *Ibis* (13) **2** : 17.

Known only from dry evergreen forest above 5,500 ft. in the north-west corner of the West Usambara Mts., northern Tanganyika. This forest covers less than 10 sq. miles ; if the species extends throughout the highland forest of the west Usambara massif it might occupy an area of about 100 sq. miles, but from the collecting that has been done without finding the bird this is not likely.

Sclater placed *montana* as a race of *Alethe* (*Bessonornis*) *anomala*. Though strikingly different in colour and pattern from the races of southern Tanganyika and northern Nyasaland (*A. a. mbuluensis*, *grotei* and *macclounii*), *montana* has some resemblance to more southern races (*anomala* and *gurue*) in size and in the general colour above, but differs in the pattern of the face and the lack of orange tone on the underparts. As noted above, we find the facial pattern suggests a closer relationship with *A. lowei*.

Alethe choloensis (27)

A. c. choloensis Sclater, 1927—Cholo Mt., S. Nyasaland.

Alethe choloensis namuli Vincent, 1933, *Bull. Brit. Orn. Cl.* **53** : 138—Namuli Mt., Portuguese East Africa.

A. c. choloensis is found in rain-forest on the mountains south of Lake Nyasa, *A. c. namuli* on Chiperone Mt. just inside the Portuguese border, and the isolated Namuli Mt. 60 miles to the east. The whole range of the species lies within a circle of 60 miles radius, and the total area of the forest the bird inhabits cannot exceed 50 sq. miles. It probably will not be found outside its present known range, since in the mountains of northern Nyasaland its place is taken by *A. fülleborni*, and south of the Zambesi a good deal of collecting has failed to discover it in the montane forest.

Although allopatric to *A. fülleborni* and found in similar habitat, *choloensis* differs in colour, pattern and size and must be accepted as a distinct species. The two form a superspecies.

Pogonocichla swynnertoni (22)

Swynnerton, 1907, *Ibis* (9) **1** : 61–67.

Smithers *et al.*, 1957 : 112. Da Rosa Pinto, 1959, *Ostrich suppl.* 3 : 113.

Known only from highland forest areas in a strip about 100 miles long on the eastern border of Southern Rhodesia, and 80 miles to the east on the isolated Mt. Gorongoza. In Rhodesia Swynnerton's Robin is common only on Mt. Selinda between 2,800 and 5,000 ft., but is found also in the Melsetter and Umtali areas. The available habitat within this range cannot exceed 100 sq. miles. Stuart Irwin (*in litt.*) informs us that there is much suitable forest northwards in Inyanga, though the levels below 3,000 ft. there have been well explored without finding it. *P. swynnertoni* is sympatric throughout its range with the only other member of the genus, *P. stellata*, which occupies forest over a greater altitudinal range and a vastly greater geographical range, namely from Cape Province to Mt. Elgon. The two birds have marked similarities in colour and general pattern but differ in some important points, both in adult and juvenile plumage and in the shape of the bill. Swynnerton found both species common and both to be mainly insectivorous ground-feeders, though the differences in bills argues some ecological segregation. *P. swynnertoni* lays a clutch of two, *P. stellata* of three, but it is not known whether the duration of the breeding seasons and the number of broods raised differ. This is an interesting case in which populations of an original stock must have diverged to specific level in isolation, one species subsequently invading the range of the other, and, in at least some localities, both so adjusting themselves ecologically that both remain common.

Namibornis herero (19)

Bradornis herero de Schauensee, 1931, *Proc. Acad. Sci. Philad.* **83** : 449—Usakos, South West Africa.

Vaurie, 1953, *Bull. Amer. Mus. Nat. Hist.* **100** : 477. Hoesch & Niethammer, 1940, *J. Orn. Sond.* : 249. Macdonald, 1957 : 130. McLachlan & Liversidge, 1957 : 354.

Apparently confined to a strip of western Damaraland about 80 miles wide and 200 miles long from the Erongo plateau to the Naukluft Mts. It lives in thick bushes in hilly and rocky areas, extending during the rainy season into the edge of the Namib desert. Since it is easily overlooked and its habitat does not seem particularly specialized, it may well range further north towards the Angola border, where little collecting has been done.

N. herero combines something of the build of a large *Bradornis* with much of the plumage of an *Erythropygia* though it lacks the distinctive tail-pattern. Hoesch & Niethammer transferred it from the Flycatchers to the Thrushes, partly on field characters. They quote Steinbacher (unpubl.) as agreeing, after anatomical examination of a specimen, but give no indication of the characters used. They were followed by Macdonald who had further field data and also a young bird which showed remnants of a speckled juvenile plumage unlike the streaked plumage of young *Bradornis*. On the other hand Vaurie in his generic revision of the Flycatchers (written before Macdonald's work was published) reaffirms that *herero* is a *Bradornis*. This we cannot accept, on both the juvenile characters and personal field experience

(B. P. H.). We regard *N. herero* as having no close relatives, and probably with more affinities to the Thrushes than to the Flycatchers.

MUSCICAPIDAE, SYLVIINAE—Warblers

Seicercus herberti (74)

Serle, 1950, *Ibis*, **92** : 346, 610 ; 1954, *Ibis*, **96** : 69 ; 1957, *Ibis*, **99** : 647.

Fairly common in parts of the forest between 3,000 and 7,000 ft. on Fernando Po, the Obudu plateau of Eastern Nigeria, and most of the mountains of the Cameroons, though apparently absent from the Bamenda–Banso highlands. The total area inhabited must be under 300 sq. miles.

In Angola and the eastern Congo the montane forest is occupied by *S. laurae* and *S. laetus* respectively : both these birds differ in many respects from *herberti*, most notably in the lack of the black cap and broad white eye-stripe, and *herberti* must be regarded as a distinct species, and all three as members of the same superspecies.

Bradypterus grandis (10)

Bannerman, **5** : 73. Chapin, **3** : 434, 436. Rand *et al.*, 1959, *Fieldiana Zool.* **41** : 343.

The type of *B. grandis* was collected in high *Pennisetum* grass at Bitye, in the former French Cameroons, and was for long the only known specimen. However Beatty has recently collected three more at M'Bigou and Mimongo in Gaboon, 300 miles to the south, in dense low growth of recently abandoned plantations. Since he reports that the birds were rarely seen, only attracting attention by their song, it is likely that they have been overlooked in other suitable localities in the Cameroons and Gaboon.

Chapin and Rand have discussed the relationship between *grandis*, *carpalis*, a bird of lowland papyrus swamps in the north-eastern Congo and Uganda, and *graueri* of swamps in the eastern Congo mountains. All three have small differences in pattern and colour, and in the edgings of the wing coverts, which are described as white in *carpalis* (not seen by us). The tail feathers vary in width and apparently in number, *grandis* having ten broad feathers, *graueri* twelve rather narrower, and *carpalis* is recorded variously as having ten or twelve broad. The smallest species is *graueri* and the largest *carpalis*, which has a disproportionately long hind claw and short tail. Especially as all appear to be ecologically different, we agree with Rand and Chapin and regard all three as distinct, though related, species, forming a superspecies.

Bradypterus graueri (92)

Chapin, **3** : 434. Schouteden, **7** : 325. Rand *et al.*, 1959, *Fieldiana Zool.* **41** : 344.

B. graueri, accepted above as a full species, has been recorded only from the Rugege forest, east of Lake Kivu, and from swamps on the west Kivu volcanoes and west of Lake Edward above 7,000 ft. Further specimens in Tervuren recently collected by Prigogine are from Nyawarongo, " west of Lake Kivu, on the mountains above Kalehe 2° S., 28° 49′ E." (Schouteden *in litt.*). All these localities are within 60 miles

of Lake Kivu but *graueri* might well occur in other high-altitude swamps in the Congo mountains. The total area of suitable highland swamp cannot exceed a few square miles and it is difficult to imagine how it can ever have done so.

Apalis sharpei (4)

Bannerman, **5** : 92.

Known only from (*a*) an unsexed specimen from an unspecified locality in Ghana ; (*b*) a male from thick bush country with large forest trees near streams " at Bandama", Ivory Coast ; (*c*) a male from tree-ferns lining a ravine on the Birwa plateau, Sierra Leone. Thus the bird probably occurs sporadically through the West African forests at least from Ghana to Sierra Leone, but is either very rare or very elusive.

The female is not known but it seems to us likely that the tail-less female, described as *A. hardyi* and now usually accepted as *A. goslingi hardyi*, may be in reality a female *sharpei*, for it was collected at Bandama on the same day as the male *sharpei* and bears a consecutive collector's number. The two differ chiefly in the colour of the throat, which is black in the male and pale rufous in the female. (A similar sexual dimorphism is found in nominate *A. rufogularis* though in other races both sexes have pale throats.) The small differences in bill size and wing length between *A. sharpei* and the type of *A. hardyi* are consistent with sexual differences.

A. sharpei forms part of a complex group, all of which are predominantly grey birds with grey tails tipped with white. Other members are (a) *bamendae* of forest in the Bamenda highlands, and *goslingi* of lowland forest in the northern and central Congo south to Angola, both of which have short tails, as in *sharpei*, and rufous throats, pale in *goslingi* ; (b) the longer-tailed eastern montane forms *porphyrolaema*, *affinis*, *vulcanorum*, *chapini*, *strausae*, *bensoni* and *kaboboensis*, all rufous-throated except for *kaboboensis*, both sexes of which have a black throat. The striking resemblance in all but tail-length between the black-throated males of *sharpei* of West Africa and *kaboboensis* from the west side of Lake Tanganyika, and between the rufous-throated *bamendae* and the *porphyrolaema* group 1,000 miles away gives some reason to regard the whole group as a single species. Alternatively two species comprising the long-tailed and short-tailed forms respectively might be recognized. However, we agree with Chapin that it is best provisionally to keep the lowland *goslingi* distinct from the montane *bamendae*, and we also think *sharpei* should tentatively be kept distinct until more is known about all these birds. We therefore class *sharpei*, *bamendae* and *goslingi* as semi-species forming a superspecies with the *porphyrolaema* group.

Apalis bamendae (75)

Serle, 1950, *Ibis*, **92** : 612.

The four known specimens of *A. bamendae* (discussed under the preceding species) were collected in forest patches above 4,000 ft. in the neighbourhood of Bamenda. Serle found it high up in the foliage and it is probably therefore a bird that easily escapes attention. It is likely to range throughout the Bamenda–Banso highlands, where we estimate there may be 200 sq. miles of forest, and it may yet be found on other mountains.

Apalis kaboboensis (93)

Apalis kaboboensis Prigogine, 1955, *Rev. Zool. Bot. Afr.* **51** : 240—Mt. Kabobo, west of L. Tanganyika.

Mayr, 1957, *J. Orn.* **98** : 30. Prigogine, 1960, *Ann. Mus. Roy. Cong. Belg.* **85** : 81.

Known only from forest on Mt. Kabobo between 5,000 and 6,000 ft. Since *A. porphyrolaema vulcanorum*, which has a rufous and not a black throat, occurs on the neighbouring massif north-west of the lake, *kaboboensis* is possibly restricted to Mt. Kabobo and therefore to an area of forest under 2,000 sq. miles. Although Mayr regarded *kaboboensis* as conspecific with *porphyrolaema*, we feel that it may have diverged more than this would indicate, and to be consistent with our treatment of *sharpei* (above) we treat *kaboboensis* as a semi-species.

Apalis karamojae (53)

Euprinoides karamojae Van Someren, 1921 (Feb.), *J. E. Afr. Ug. Nat. Hist. Soc.* **16** : 25 (not Van Someren, 1921 (May), *Bull. Brit. Orn. Cl.* **41** : 120, as given by Sclater and Praed & Grant)—Mt. Kamalinga, Karamoja, NE. Uganda.

A bird that is most imperfectly documented. Since its discovery it was known for 40 years only from a small part of eastern Uganda, but while this paper was in preparation Stronach collected a specimen (of a darker population) some 450 miles to the south, on the other side of Lake Victoria in north-central Tanganyika. The Uganda records rest on the type, a specimen in the British Museum from about 30 miles away at the base of Mt. Debasian (Kadam), and a third in the Coryndon Museum from Mt. Moroto, 50 miles to the north. These localities are all in an area of less than 1,000 sq. miles. No first-hand information is available about the habitat, but these Uganda birds do not seem to be montane. The Debasien bird came from the base of the mountain and Williams (*in litt.*) tells us that the Moroto specimen was collected with other birds which were likely to have come from the lower slopes of the mountain, where the vegetation is " thick and high bush and small trees, especially along the seasonal watercourses ". By contrast, for the Tanganyika specimen we have precise details : Stronach (*in litt.*) collected it in a belt of *Acacia drepanolobium*, with some *A. kirkii*, at Itumba, close to the swampy Wembere depression, 75 miles ESE. of Nzega. Thus the species as a whole is evidently non-montane but the vegetation type it inhabits seems to vary a good deal. The present wide separation of the Uganda and Tanganyika populations may be largely due to the very extensive clearing and cultivation in recent times round the shores of Lake Victoria. The bird's range is more likely originally to have extended round the eastern side of the lake than the western, where the higher rainfall produces quite a different kind of vegetation, with much evergreen forest.

A. karamojae does not appear to have any close relatives. In the white patch on its wing it is unlike any other *Apalis*. In other respects it might be thought to resemble a bleached *A. thoracica* but it has very much weaker legs and feet.

Apalis (? Orthotomus) moreaui (29)

Apalis moreaui Sclater, 1931, *Bull. Brit. Orn. Cl.* **51** : 109—Amani, East Usambara Mts., Tanganyika.

Apalis moreaui sousae Benson, 1945, *Bull. Brit. Orn. Cl.* **66** : 19—Njesi plateau, Portuguese East Africa (east side of L. Nyasa).

White, 1960, *Bull. Brit. Orn. Cl.* **80** : 152.

The type localities of the two subspecies lie 650 miles apart and the species has not been found on any of the intervening mountains, although if it were present its characteristic call would draw attention to it. In each locality less than ten specimens have been collected in montane forest, which in the East Usambara Mts. is barely 100 sq. miles in extent, and on the Njesi plateau probably not more than 10 sq. miles.

The long bill of *moreaui* distinguishes it from all forms of *Apalis*. White has suggested that it should be considered congeneric with *Artisornis metopias*. This also is a montane forest species with, like *moreaui*, the extreme localities in Usambara and Portuguese East Africa, but *metopias* has been collected on several of the intervening mountains. With White's suggestion we would agree subject to the nest of *moreaui*, at present unknown, proving to be a stitched structure like that of *metopias*. At the same time we have re-examined specimens of *Artisornis metopias* and compared them with tailor birds from Asia, and find no reason why *Artisornis* should not be submerged in the genus *Orthotomus* (cf. Friedmann, 1928, *Ibis* : 476). *A. metopias* shows no significant morphological differences and in colour is remarkably like *O. sepium*.

Scepomycter winifredae (33)

Artisornis winifredae Moreau, 1938, *Bull. Brit. Orn. Cl.* **58** : 139—Uluguru Mts., Tanganyika.

Grant & Praed, 1941, *Bull. Brit. Orn. Cl.* **62** : 30. Moreau, 1946, *Bull. Brit. Orn. Cl.* **66** : 44. Williams, 1951, *Ibis*, **93** : 469.

A distinctive chestnut-headed warbler known only from the Uluguru Mts. between 5,500 and 7,000 ft., in both wet and dry types of evergreen forest, which cover less than 100 sq. miles. It shows a preference for areas with heavy undergrowth and dense secondary growth, and is difficult to locate except by its call, a soft whistle. It might yet be found in one or more of the patches of montane forest on the mountains to the west but the total area it inhabited would still be very small.

Although the type, a young bird, was originally referred very tentatively to *Artisornis*, *winifredae* was later placed in a monotypic genus on the structure of the nostrils. The discovery of fully adult specimens shows it to be a bird of heavier build than any of the tailor-birds, and with a broader heavier bill. It seems to have no close relatives and the best course at present is to keep it in its monotypic genus.

Urolais epichlora (76)

Serle, 1950, *Ibis*, **92** : 612 ; 1954, *Ibis*, **96** : 69 ; 1957, *Ibis*, **99** : 648.

Found throughout the British Cameroons, on the Obudu plateau of Eastern Nigeria and on Fernando Po. Usually a bird of montane forest, it has been collected in savanna at 3,000 ft. between Mt. Kupé and Mt. Manenguba, so might possibly be found more widely. The area inhabited may perhaps be taken as 600 sq. miles.

The only difference from *Prinia* observable in the skin is the green colour of much of the plumage, which is probably due to nothing more than a general infusion of

lipochrome. Only the absence of sufficient information on the field characters, especially of nests and eggs, makes us refrain from transferring the species to *Prinia*.

Poliolais (? Orthotomus) lopesi (77)

Serle, 1949, *Bull. Brit. Orn. Cl.* **69** : 74 ; 1950, *Ibis*, **92** : 613 ; 1954, *Ibis*, **96** : 69 ; 1957, *Ibis*, **99** : 649. Boulton & Rand, 1952, *Fieldiana Zool.* **34** : 53.

A bird of the undergrowth and thickets in primary and secondary montane forest of Fernando Po (*P. l. lopesi*), Cameroon Mt. (*P. l. alexanderi*), Manenguba, Kupé Mt. and the Rumpi Hills (*P. l. manengubae*), which has also been seen on the Obudu plateau of Eastern Nigeria. Its habitat is probably therefore limited to under 350 sq. miles. It is usually found singly, or in small family parties, but nothing is yet known of its nesting habits. This is unfortunate, for there is a marked resemblance between *Poliolais* and the tailor-bird *Orthotomus* (formerly *Artisornis*—see p. 341) *metopias*, and knowledge of the nests would help to determine their relationship. The similarity to *metopias* is most striking in the females of *P. l. manengubae*. Both birds have rufous heads, slightly brighter in *metopias*, and olive-brown backs with the same ragged texture to the plumage due to the barbs being widely separated : both have ten rather narrow, debilitated rectrices, slightly graduated, but whereas in *metopias* all are grey-brown, in *lopesi* the outer three pairs are white. Both have olive-brown wings with exceptionally broad primaries, similar wing formulae, similar white under wing-coverts flecked with rufous, and with a white edging to the angle of the wing. Below, both have a mixture of rufous, white and grey, though in *metopias* the rufous is more pronounced on the throat and the abdomen is whiter : both have olive-brown thighs. The bills and legs are alike, and the species are close in size, as the following table shows, though *lopesi* is slightly larger, with a relatively shorter tail.

The male of *lopesi* differs in being all grey except for the outer pairs of white rectrices, white under wing-coverts, some white in the abdomen and olive-brown flanks and thighs. The young bird of *lopesi* is similar to the female except that the rufous in the head is greatly reduced and the whole underparts are green. In young *metopias* the underparts are probably yellower (" olive-yellow "), and the head more rufous than the adult (see *Ibis*, 1933 : 27).

Poliolais lopesi and *Orthotomus metopias*

	Wing		Bill		Tail		Tarsus	
	♂	♀	♂	♀	♂	♀	♂	♀
O. metopias, 9 ♂, 7 ♀	47–52 (49·7)	45–49 (47·2)	16–17 (16·6)	16–17 (16·5)	36–39 (38·1)	34–37 (35)	21–23 (22)	21–23 (22)
P. l. manengubae, 7 ♂, 6 ♀	53–57 (54·8)	47–53 (50·5)	16–17 (16·4)	16–17 (16·4)	34–38 (35·2)	24–28 (26)	23–25 (23·9)	21–23 (22)
P. l. alexanderi, 1 ♂, 1 ♀	53	50	16	15	31	25	23	22
P. l. lopesi, 4 ♂, 3 ♀ .	54	50–51	16–17	15–16	30–34	25	23	21–22

Although there is no tailor-bird known with marked sexual dimorphism or white rectrices, these characters do not preclude the two species being congeneric (similar differences are found in *Apalis*), and in other respects the similarities are so striking that we recommend the transfer of *lopesi* to *Orthotomus* if it is found to stitch its nest. Meanwhile we retain the monotypic genus.

Prinia leontica (2)

Prinia leontica Bates, 1930, *Bull. Brit. Orn. Cl.* **51** : 51—Birwa Peak, Kono district, Sierra Leone.

Bannerman, **5** : 225. White, 1960, *Bull. Brit. Orn. Cl.* **80** : 150.

Known only from four highland localities within an area of 50 miles by 50 on either side of the Sierra Leone–Guinea border. It lives in thickets bordering streams at altitudes from 1,600 to 4,500 ft., but was found to be commonest in the mountain ravines. If, as seems likely, it is confined to mountains it will not be found outside this small area, except perhaps on Bintumane Peak, 30 miles to the north-west.

White considers that *leontica* is " no more than a well marked subspecies of *leucopogon* ", the white-chinned Prinia, which reaches its western limit in the British Cameroons about 1,500 miles away. The two birds are alike in many respects but *leontica* is slightly smaller and has the throat grey like the breast, the eye creamy white instead of red-brown and a strong suffusion of buff on the abdomen and thighs—in this respect more like the eastern *P. l. reichenowi* than the western *P. l. leucopogon*. We consider that *leontica* has diverged sufficiently to be regarded as a semi-species.

Prinia robertsi (23)

Prinia robertsi Benson, 1946, *Bull. Brit. Orn. Cl.* **66** : 52—Vumba, near Umtali, S. Rhodesia.

Benson, 1946, *Ostrich*, **17** : 291. Smithers *et al.* 1956 : 126.

Found in the highlands above 4,500 ft. on the eastern edge of Southern Rhodesia in a strip about 170 miles from north to south. Stuart Irwin *in litt.* informs us that it is a bird of " bracken-briar ", tree heath and forest edge rather than a forest species and that this type of habitat covers only about 5% of the total land area within the bird's range—probably therefore under 500 sq. miles. *P. robertsi* is apparently common where found but has not yet been recorded from neighbouring Portuguese territory, where it might perhaps occur in a small area.

Although little distinguished in colour from other dull prinias, *P. robertsi* is well characterized as a species by its exceptionally long, narrow, steeply graduated and rather ragged tail. Though not so exaggerated, this is slightly reminiscent of the Asiatic prinias of the subgenus *Suya*, but there is no other feature to suggest close relationship.

Graueria vittata (94)

Chapin, **3** : 243. Schouteden, **7** : 232. Prigogine, 1953, *Ann. Mus. Roy. Cong. Belg.* **24** : 55.

Known from five localities at 5,000–7,000 ft. scattered over 250 miles between Lakes Edward and Tanganyika. It is a bird of montane forest, which in this area may cover about 5,000 sq. miles. Prigogine believes it is not particularly rare but very inconspicuous.

It appears to have no close relatives and even its family is uncertain. Its short, stout legs, and strong, slightly hooked bill are not very warbler-like, but Chapin thinks it is best kept with the Sylviidae rather than with the bulbuls or babblers. He also discusses some affinities between *Graueria* and *Macrosphenus*, but they are not close.

Macrosphenus pulitzeri (17)

Macrosphenus pulitzeri Boulton, 1931, *Ann. Carn. Mus.* **21** (1) : 50—Chingoroi, western Angola.

Delacour, 1946, *Oiseau*, **16** : 12. Chapin, **3** : 245. Hall, 1960, *Ibis*, **102** : 435.

This long-bill is known only from two specimens from the neighbourhood of Chingoroi, taken in " dry, evergreen forest " (Boulton) and " secondary forest " (da Rosa Pinto *in litt.*) and from one taken at Vila Nova do Seles, also in secondary forest on the escarpment, about 110 miles north of Chingoroi (da Rosa Pinto). The bird may well occur in other relict patches of forest on or under the escarpment but these are unlikely to cover a total of more than a few hundred square miles.

The species was described on a single specimen, said to differ from all other members of the genus in the shape of the bill, the length of the tarsus, and in the wing/tail ratio, having the tail longer in relation to the wing than *M. concolor*, *M. kempi*, or *M. flavicans*, and shorter than in *M.* (*Suaheliornis*) *kretschmeri*. No direct comparison was made in colour between the species. Chapin believed *pulitzeri* to be the geographical representative of *concolor* which ranges fron West Africa to Uganda, reaching its southern limits in north-eastern Angola.

We have examined the specimen from Novo do Seles (unfortunately tail-less, as is the second Chingoroi specimen) which closely resembles the type in size and shape, but is slightly darker above and below (Parkes *in litt.*). We do not find the bill of *pulitzeri* distinct, since it can be matched by those of some specimens among the large series of *concolor* available to us, which vary considerably. On the other hand we find that *pulitzeri* differs in colour from the other three green species, *concolor*, *flavicans* and *kretschmeri*, in having more melanin throughout ; it is dark, more olive-brown, above, darker olive below, and has black lores with a black spot in front of the eye, some black in the ear-coverts, and black, rather than grey, bases to all the body feathers. These colour differences alone do not necessarily indicate more than subspecific variation, but considered in conjunction with the anatomical differences of the wing/tail ratio and, in particular, the length of the tarsus, we regard *M. pulitzeri* as a full species, forming a superspecies with *concolor*.

Sclater allocated the genus *Macrosphenus* to the babblers, and Praed & Grant to the bulbuls, but we follow Chapin in including it in with the warblers although no detailed reasons for doing so appear to have been published (see Delacour).

Chloropeta gracilirostris (26)

C. g. gracilirostris Ogilvie-Grant, 1906 : Mokia, south-east of Ruwenzori.

Chloropeta gracilirostris bensoni Amadon, 1954, *Ostrich*, **25** : 141—mouth of Luapula River, Lake Mweru, N. Rhodesia (synonym *C. g. brédoi* Schouteden, 1955).

Grant & Praed, 1940, *Bull. Brit. Orn. Cl.* **60** : 91. Chapin, **3** : 450. Schouteden, **7** : 329.

The swamp representative of the aberrant broad-billed flycatcher-warblers, it is known from two areas 700 miles apart ; in the north there are several records around Lakes Edward, George, Bunyoni and Mutanda, where suitable swamps are unlikely to total 100 sq. miles : in the south the species has been found only at the mouth of the Luapula on Lake Mweru, being apparently absent from both the Bangweola marshes and " Mweru Marsh " (Benson *in litt.*).

Sclater and others include *gracilirostris* in the genus *Chloropeta* along with two other species, *natalensis* and *similis*. *C. natalensis* ranges from Angola and Abyssinia to Natal at altitudes up to about 7,000 ft., usually in open areas with plenty of low bushes or bracken. *C. similis* lives from 6,000 ft. upwards, associated with the edge of forest and bamboo thickets on mountains throughout East Africa, so that on some it occupies the higher slopes and *natalensis* the lower. Because *gracilirostris* has a longer bill and much larger feet than the other two species Grant & Praed separated it as a monotypic genus but the differences can be regarded as merely adaptations to its life in aquatic vegetation ; and we, like Chapin and Amadon, retain *gracilirostris* in the genus *Chloropeta*. Although their habitat preferences are well-defined, geographically the three species are not so clearly allopatric that they come within the definition of a superspecies.

HIRUNDINIDAE—Swallows

Hirundo megaensis (56)

Hirundo megaensis Benson, 1942, *Bull. Brit. Orn. Cl.* **63** : 10—Mega, S. Abyssinia. Benson, 1946, *Ibis* : 287. Mayr, 1957, *J. Orn.* **98** : 28.

A swallow known only from an area of about 3,000 sq. miles from north of Yavello to south-east of Mega. There it is common in the short-grassed country with small thorn-bushes between 4,000 and 4,500 ft., which does not seem to form an ecological island. Its southern limit is an escarpment dropping to 3,000 ft. (which one would not have thought a feature of great importance to a swallow), but no sort of natural boundary can be suggested for its limits in other directions, where Benson failed to find it in apparently suitable country.

H. megaensis is most like *H. leucosoma* of West Africa but lacks the white patch in the wing and has differences in tail-pattern and colour, as well as rather different field characters. It seems to us sufficiently distinct to be considered a full species. Mayr associates *dimidiata* of southern Africa with these two to form a superspecies.

Psalidoprocne fuliginosa (78)

Bannerman, **5** : 297. Young, 1946, *Ibis*, **88** : 381. Serle, 1950, *Ibis*, **92** : 618. White, 1961, *Bull. Brit. Orn. Cl.* **81** : 32.

Since the bird described as *P. f. sammetina* from the Bamenda highlands does not belong to this species but to *P. petiti* (see Bannerman), *P. fuliginosa* is known only from Fernando Po (from 1,000 ft. upwards) and from Cameroon Mt., where it is common from 2,500 ft. to 9,000 ft. over clearings in the forest, and above the timber line. If its habitat is regarded as the unforested areas in these mountains, then the area it inhabits must be under 100 sq. miles, for its place is taken on other mountains of the Cameroons by *P. petiti*, and in the lowlands by *P. nitens*.

P. fuliginosa is the only member of its genus which is uniform brown with the metallic sheen virtually absent : it is perhaps closest to *P. antinorii* of Abyssinian montane forest which has a faint purple-brown sheen, white under wing-coverts (brown in juveniles) and a more deeply forked tail. The two might be considered members of a superspecies (cf. White).

PRIONOPIDAE—Helmet-shrikes

Prionops gabela (13)

Prionops gabela Rand, 1957, *Fieldiana Zool.* **39** : 43—15 km. south of Gabela, western Angola.

Hall, 1960, *Bull. Brit. Mus.* (*Nat. Hist.*) *Zool.* **6** (7) : 437 ; 1960, *Ibis*, **102** : 435. Da Rosa Pinto, 1961, *Bol. Cult. Mus. Angola*, **2** : 17.

This helmet-shrike is now known from six specimens, taken within 25 miles of Gabela. Most were found in secondary forest or clearings on the escarpment but one was collected in a tangled thicket on the coastal plain. It can be expected in any similar cover on or below the Angola escarpment, and suitable habitat may cover several hundred square miles.

Rand has shown this helmet-shrike to be intermediate in some respects between the widespread *P. retzii*, which it much resembles in colour, and *P. plumata* (*poliocephala*), which has a similar forward growth of the frontal feathers. It has not yet been established whether *P. gabela* is indeed allopatric to either of these species, which have been collected above the escarpment. Provisionally it might be considered as forming a superspecies with *P. retzii*.

LANIIDAE—Shrikes

Laniarius atroflavus (79)

Serle, 1950, *Ibis*, **92** : 619 ; 1957, *Ibis*, **99** : 660. Good, 1953, **2** : 116.

Common in the forest of most mountains of the British Cameroons and extending over the borders to Babadjou on the eastern extension of the Bamenda highlands in former French territory and to the Obudu plateau, Eastern Nigeria. The total area it inhabits probably does not exceed 500 sq. miles.

The bright yellow underparts distinguish *atroflavus* from other boubous and it has apparently no close relatives.

Telophorus (Chlorophoneus) kupeensis (80)

Chlorophoneus kupeensis Serle, 1951, *Bull. Brit. Orn. Cl.* **71** : 41—Kupé Mt., Kumba Division, British Cameroons.

Peters, **9** : 337.

Known only from four specimens taken in the forest on Kupé Mt. It is either very rare or hard to find, for after the original pair had been obtained it was only rediscovered after several attempts. If indeed it occurs nowhere else it has a range of less than 8 sq. miles.

It is a very distinct species, larger than other members of the genus, showing an approach to *Malaconotus* and, though like *T. multicolor* in the colour and pattern of the back, it has a distinctive white throat, grey chest and yellow-green abdomen and under tail-coverts.

Malaconotus gladiator (81)

Stresemann, 1924, *J. Orn.* : 85. Chapin, **4** : 45. Serle, 1950, *Ibis*, **92** : 622 ; 1954, *Ibis*, **96** : 72.

A green-breasted bush-shrike known from five specimens from Camaroon Mt., the Rumpi Hills, near Lake Bambulue in the Bamenda highlands, and the Obudu plateau, Eastern Nigeria (F. C. Sibley *in litt.*). Serle and Sibley both found it in forest or forest strips between 5,000 and 6,500 ft. but the fact that Sibley found the stomach of his specimen to be full of large locusts suggests that it had foraged in the surrounding grasslands. It may occur on all the Camaroon mountains but the total area inhabited is unlikely to exceed 300 sq. miles.

Having only the type-specimens to consider, Stresemann believed *gladiator* to be a green mutation of the widespread savanna species *M. poliocephalus* (now *M. hypopyrrhus*), but its rediscovery by Serle and Sibley establishes it as a good species with a different habitat from *hypopyrrhus*. In addition to the different colour of the breast, *gladiator* differs from *hypopyrrhus* in having the yellow tips to the wing and tail feathers reduced to a minimum, or absent, a variable amount of grey on the chin, and no white in front of the eye. It has also a grey, not yellow, eye. The two birds may be regarded as forming a superspecies. The extension of green in the plumage of *gladiator*, i.e. the extension of melanin, is consistent with adaptation to evergreen habitat.

Malaconotus alius (34)

Known only from the forest on the Uluguru Mts. of Tanganyika Territory between 5,000 and 6,000 ft. The area it inhabits is probably under 100 sq. miles, but it might occur in the small forest patches on the mountains to the west.

It differs from all other members of the genus in having a shiny black, instead of a grey head, and a brown eye. In the lack of yellow tips to the tail and wing feathers it is similar to *M. gladiator*, and also shows an approach to this species in having a suffusion of green on the underparts, especially the flanks and thighs, but it is a smaller bird. The resemblances are as likely to be due to convergence as to closeness of relationship and in view of the distances separating them we do not regard them as forming a superspecies.

CORVIDAE—Crows

Zavattariornis stresemanni (57)

Zavattariornis stresemanni Moltoni, 1938, *Orn. Monatsb.* **46** : 80—Yavello, S. Abyssinia.

Benson, 1946, *Ibis*, **88** : 448. Lowe, 1949, *Ibis*, **91** : 102. Ripley, 1955, *Ibis*, **97** : 143.

The Abyssinian " Bush-crow " has a very restricted range, in park-like *Acacia* country that occupies parts of an area of about 1500 sq. miles round Yavello, Mega and Arero. Neither Benson nor von Rosen (*in litt.*) on personal experience can account for its absence to the east or west, where the country appears similar, but to the south the country becomes more open, and to the north higher, which may limit the distribution in these directions.

The taxonomic relationships of *Zavattariornis* are equally puzzling. In life *Zavattariornis* in several respects reminded Benson of a starling, but, while Lowe doubted on anatomical grounds that it is either a starling or a corvid, the original describer and subsequently Amadon and also Ripley (after anatomical examination) have all classified it as a corvid, probably closest to the choughs.

STURNIDAE—Starlings

Cinnyricinclus (Pholia) femoralis (43)

Van Someren, 1922, *Nov. Zool.* **29** : 129 ; 1939, *Journ. E. Afr. Nat. Hist. Soc.* **14** : 112. Wigram, 1948, *Nature in E. Afr.* **5** : 3. Amadon; 1956, *Amer. Mus. Nov.* **1803** : 4.

Published information on the distribution of this montane forest starling is scarce but has been supplemented for us by Williams (*in litt.*). It inhabits Kilimanjaro, apparently to the exclusion of its closest relative, *C. sharpii* (which is more widespread, from Abyssinia to Nyasaland) and also occurs in Kenya where it breeds alongside *C. sharpii* at Limuru, 20 miles north-west of Nairobi. In the forest of the southern end of the Chyulu Hills van Someren found both *femoralis* and *sharpii* in flocks, *femoralis* feeding on fruits of *Cornus volkensii* and *sharpii* on fruits of a species of *Sapium*. There are also sight records of *femoralis* on Mt. Kenya and at Molo, on the west side of the Rift Valley, " where it appears to be a spasmodic visitor or perhaps just overlooked " (Williams). Williams thinks that *femoralis* is much the shyer of the two species, keeping more to the tree-tops, especially of *Juniperus procera*, while *sharpii* at times feeds very near the ground. While the northern and southern limits of the range of *femoralis*, namely Mt. Kenya and Kilimanjaro, are 200 miles apart, the scanty data available suggest that the area actually occupied is probably less than 5,000 sq. miles, but more if *femoralis* fully occupies the forests west of the Rift Valley.

In Kenya, while it is still uncertain whether *femoralis* and *sharpii* actually breed in the same forests, they are at least partly sympatric. The two species seem closely related, differing chiefly in the colour and pattern of the underparts, which in *femoralis* are contrasting blue-black and white, and in *sharpii* wholly light buff. There are also

small differences in structure, and in the plumage of the young. The third member of the genus, *C. leucogaster*, is more distinct and is not confined to forest.

NECTARINIIDAE—Sunbirds

Cinnyris rockefelleri (95)

Cinnyris rockefelleri Chapin, 1932, *Amer. Mus. Nov.* **570** : 16—9,000 ft. on Mt. Kandashomwa, west of Ruzizi valley, Belgian Congo.

Chapin, **4** : 236. Schouteden, **8** : 198. Williams, 1950, *Ibis*, **92** : 645 ; 1951, *Ibis*, **93** : 469. Hendrickx & Massart-Lis, 1952, *Ibis*, **94** : 531.

Found only at a few localities between 8,500 and 10,000 ft. in the chain of extinct volcanoes 100 miles long west of the Ruzizi valley from west of Lake Kivu to Lake Tanganyika. It is evidently a bird of the bamboo and heath zones, which, in this area, cannot cover more than 100 sq. miles.

The relationships between the montane double-collared sunbirds, *rockefelleri*, *regius* (subspp.), *moreaui*, *loveridgei* and *mediocris* (subspp.), are difficult to understand. The male of *C. rockefelleri* looks most like that of *C. regius*, and the female (by description) like those of *C. moreaui* and *C. loveridgei*. However *rockefelleri* is larger than *regius* and furthermore both are found on the same mountains at the same altitudes so cannot be considered conspecific. Apart from these two, the general similarities of plumage and otherwise allopatric distribution of the sunbirds concerned suggest that all could be treated as conspecific. However Williams has shown that at least *loveridgei* and *moreaui* have diverged in several respects from the rest of the group, and, to a less degree, from each other and may have achieved specific status. Since *rockefelleri* is in some characters a link between these two and *regius* we accept it also provisionally as at least a semi-species.

Cinnyris moreaui (31)

Cinnyris mediocris moreaui Sclater, 1933, *Ibis* (13) **3** : 214—Maskati, 6,000 ft., Nguru Mts., east central Tanganyika.

Praed & Grant, **2** : 785. Williams, 1950, *Ibis*, **92** : 645.

This sunbird (discussed under the preceding species) has been found in forest patches at three mountain localities within 100 miles in central Tanganyika, namely, on the discontinuous line of highlands formed by the Nguru and Ukaguru Mts. and Uvidunda 70 miles south of Kilosa. These forest patches probably cover less than 100 sq. miles. The bird may possibly occur on other forested mountains of Tanganyika, though there are few on which the closely allied sunbirds *loveridgei*, *mediocris* or *regius* have not already been found.

Provisionally we regard *moreaui* and *loveridgei* as semi-species (cf. Williams) until more is known of their breeding habits and immature plumages, though the differences between them are not great.

Cinnyris loveridgei (32)

Williams, 1951, *Ibis*, **93** : 469.

C. loveridgei (discussed under the two preceding species) seems typically to be a

bird of montane forest but has adapted itself also to clearings from 2,500 to 7,500 ft. in the Uluguru Mts. Since neighbouring mountains are all occupied by allied species, its range is probably limited to the Ulugurus and the area inhabited to under 500 sq. miles.

Chalcomitra ursulae (82)

Grote, 1948, *Ibis*, **90** : 339. Serle, 1950, *Ibis*, **92** : 627 ; 1954, *Ibis*, **96** : 75.

A small dull-coloured sunbird known from six specimens collected on Fernando Po, Cameroon and Kupé Mts., and from a good series from the Rumpi Hills (also in British Cameroons). It ranges from 3,200 to 6,500 ft. and has been collected in primary and secondary forest and, on Fernando Po, in low bushes on the mountain side. The area it inhabits probably does not exceed 300 sq. miles. It has a general resemblance to the partly sympatric *Cyanomitra olivacea* but is far smaller, has a darker throat, a more pronounced metallic blue forehead, and orange instead of red pectoral tufts.

Cyanomitra oritis (83)

Serle, 1950, *Ibis*, **92** : 627 ; 1954, *Ibis*, **96** : 76.

Common in the montane forest on Fernando Po and in the British Cameroons, its place being taken below 5,000 ft. by the green-headed *C. verticalis*. The area it inhabits is under 600 sq. miles.

Males of *C. oritis* differ from *verticalis* in having the head blue, not green, and the underparts olive-yellow instead of green. Moreover the female of *C. oritis* has metallic plumage on the throat and breast like the male. In this latter respect, and in the blue tone of the metallic plumage, *oritis* is similar to *C. alinae* of the montane forest of the eastern Congo, but the two species differ in the colour of the back and the colour of the abdomen. The lowland species *verticalis* and the two montane species, *oritis* and *alinae*, may be regarded as forming a superspecies.

Anthreptes pallidigaster (39)

Anthreptes pallidigaster Sclater & Moreau, 1935, *Bull. Brit. Orn. Cl.* **56**—Sigi valley, 4 miles east of Amani, Tanganyika.

Praed & Grant, **2** : 816. Moreau & Moreau, 1937, *Ibis* (14) **1** : 337.

A white-bellied sunbird found in evergreen forest up to 3,000 ft. in the East Usambara Mts. and, commonly, in tall *Brachystegia* in the Sokoke Forest on the Kenya coast 200 miles to the north (Williams *in litt.*). It might also be expected in other relict forest patches on or near the East African coast but, on present knowledge, the area it inhabits is less than 250 sq. miles.

It has no close relatives.

Anthreptes rubritorques (35)

Praed & Grant, **2** : 811. Chapin, **4** : 193. Moreau & Moreau, 1937, *Ibis* (14) **1** : 335.

A mountain sunbird, found on forest edge between 3,000 and 5,000 ft. on both the East and West Usambara Mts. and in the Nguru Mts. 100 miles to the south-west. It probably occupies less than 2,000 sq. miles.

It is very like *A. rectirostris* and *tephrolaema* of West and Equatorial Africa, east to Mt. Elgon, and all are considered conspecific by some authors. The males of the three forms differ in the colour and pattern of the throat and breast. No specimens sexed as females are known from the Usambara Mts. but there are two unsexed specimens in Berlin believed by Stresemann to be females, and one "breeding" female in the British Museum from the Nguru Mts., presumed to be the same form though there is no male for comparison. These suggest that the females of *rubritorques* may differ from those of *rectirostris* and *tephrolaema* in having a considerable amount of metallic plumage above : the Nguru female furthermore has a trace of a metallic band at the sides of the breast. If these differences are substantiated we consider that *rubritorques* has diverged sufficiently to be regarded as a semi-species.

Anthreptes pujoli (3)

Anthreptes pujoli Berlioz, 1958, *Bull. Mus. Hist. Nat. Paris* (2) **30** : 494—Sérédou area, 45 km. south of Macenta, (French) Guinea.

A species founded on a single male (which we have not seen) believed from its black bill to be fully adult. It was collected in country between 2,000 and 4,000 ft. described as mostly forested (and probably not ecologically peculiar).

A. pujoli is described as generally similar in size and colour to a female of *A. tephrolaema*, but having distinctive light markings on the wings. The West African representative of *tephrolaema*, *A. rectirostris*, is found in the same area, for a young male with metallic plumage coming in on the head and mantle was collected by Bates 35 miles south-east of Macenta. Unless the type of *pujoli* is an aberrant specimen it must represent a distinct species, and we provisionally accept it as such, as has been done also by Rand (*in litt.*) for the *Check List of the Birds of the World.*

Ploceidae—Weavers

Ploceus bannermani (84)

Serle, 1950, *Ibis*, **92** : 631. Moreau, 1960, *Ibis*, **102** : 469.

Known only from about half a dozen specimens from the edges of, and openings in, evergreen forest at 5,000 it. and upwards on Manenguba Mt. and the Bamenda highlands of the Cameroons. The area it occupies is therefore probably less than 200 sq. miles. It may possibly occur on one or more of the neighbouring mountains, where however Serle has collected without finding it.

It is a member of the *Ploceus baglafecht* species-group, but cannot be regarded as forming a superspecies with it since it is sympatric with *P. b. neumanni* : its closest relative may be *P. nigrimentum* which has been found 600 miles to the south-east (see below).

Ploceus batesi (9)

Good, 1953, **2** : 157.

A forest weaver known only from a few specimens from a line of localities, Lolodorf, Sangmelima, and R. Ja, about 100 miles long in the former French Cameroons.

The species might well range into the neighbouring parts of Gaboon on the south and Moyen Congo on the east, which are imperfectly known ornithologically.

It is another of the *P. baglafecht* species-group, but with a distinctive chestnut crown in the males. There is no reason why both this and the next species should not be regarded as forming a superspecies with *baglafecht*.

Ploceus nigrimentum (11)

Chapin, **4** : 313. Moreau, 1960, *Ibis*, **102** : 316. Rand *et al.*, 1959, *Fieldiana Zool.* **41** : 382.

Known only from savanna at Dhambala on the Bateke plateau (2,400 ft.) in the Moyen Congo, and from above 5,000 ft. at Mombolo and Galanga, 650 miles to the south in the Bailundu highlands of Angola, where there is montane forest, woodland and grassland. Nothing definite can therefore be said of its habitat, but this weaver must be expected elsewhere.

P. nigrimentum is most like *P. bannermani*, but with a black, not green, back and marked sexual dimorphism, is distinctive enough always to have been regarded as a separate species.

Ploceus aureonucha (50)

Chapin, **4** : 372.

A forest weaver of exceptionally beautiful and varied coloration known only from about half a dozen specimens from a triangle of forest with sides of about 100 miles (i.e. an area of about 5,000 sq. miles) in the north-eastern Congo near Beni. It may well occur more widely. It seems to have no near relative.

Ploceus golandi (40)

Williams & Clancey, 1959, *Ibis*, **101** : 247.

The type of this black-headed weaver, described in 1913 from the Sokoke forest on the Kenya coast, remained unique until the species was rediscovered there in 1955. It may perhaps be found in other relict patches on the East African coast but the area it inhabits, as known at present, is less than 150 sq. miles.

Its closest relative appears to be *P. weynsi* of the Congo forest, from which it differs in having the back black and green instead of all black, and the underparts plain yellow instead of patterned. We regard them as members of a superspecies.

Ploceus castaneiceps (41)

Moreau, 1959, *Bull. Brit. Orn. Cl.* **79** : 159–161.

A weaver that forms colonies in a few swamps in a narrow strip on both sides of the Kenya–Tanganyika border, the extreme points of its known range being Arusha, Mkomasi, and the neighbourhood of Mombasa. Fuggles-Couchman, who has paid special attention to this bird, has failed to find it west of Arusha (personal communication). These points enclose about 8,000 sq. miles, much of which is arid, and within it swamps probably account for less than 50 sq. miles.

It is apparently a good species sympatric with the very similar *P. bojeri* and *P. aureoflavus*, both of which have wider ranges and are not confined to swamps.

Ploceus spekeoides (52)

Ploceus spekeoides Grant & Praed, 1947, *Bull. Brit. Orn. Cl.* **68** : 7—Nariam, Teso, central Uganda.

Moreau, 1960, *Ibis*, **102** : 309.

Known only from an area about 100 miles by 150 in Teso and Lango districts Uganda, where it breeds over water in open country and is not uncommon. Pitman (*in litt.*) tells us that, on the basis of his local knowledge, there is no apparent reason why it should not occur more extensively.

It is extremely like *P. spekei* in plumage and both forms have the first primary more reduced than in any other *Ploceus* species. It is, moreover, allopatric, though not contiguous, to *spekei* of north-eastern Africa, their ranges being separated by about 100 miles. However since *spekeoides* is much smaller than *spekei*, differs in female plumage and seems to differ in habits, it is for the present regarded as at least a semi-species.

Ploceus flavipes (48)

Chapin, **4** : 388. Moreau, 1960, *Ibis*, **102** : 306. Prigogine, 1960, *Rev. Zool. Bot. Afr.* **61** : 364.

An all-black weaver known from about half a dozen specimens collected in a narrow triangle of forested country covering about 3,000 sq. miles east of Avakubi in the eastern Congo, and including part of the area from which *P. aureonucha* is known. It may well occur more extensively in the Congo forests.

Owing to its peculiar large nostrils, *flavipes* has been treated by some authors as a separate, monotypic, genus, while others have regarded it as a *Malimbus*. There are no biological data to help in judging its closest affinities.

Malimbus ibadanensis (5)

Malimbus ibadanensis Elgood, 1958, *Ibis*, **100** : 622—Ibadan, Nigeria.

Elgood (*in litt.*) tells us that this weaver appears to be confined to an area of "forest fringe" about 45 by 10 miles between the Ogun and Oshun rivers, near Ibadan. Since this does not seem to be an ecological island the bird is likely to be more widely distributed.

Three other species of *Malimbus*—*M. rubricollis*, *M. nitens* and *M. scutatus*—also occur in the area, and the possibility of *ibadanensis* being a hybrid was very carefully considered, only to be discarded, before it was described as a species. Specimens subsequently obtained have supported this view, for no intermediates have been found (Elgood).

ESTRILDIDAE—Waxbills, etc.

Cryptospiza shelleyi (96)

Chapin, **4** : 448. Schouteden, **9** : 403.

One of the four known species of crimson-wing, all of which are found in the montane forests of Ruwenzori and the eastern Congo. It is the rarest and the most restricted in range, being confined to the mountains from Ruwenzori south to the

Ruzizi valley, on both sides of L. Kivu. It has not been found below 6,200 ft. and the area it inhabits is probably less than 1,500 sq. miles.

It is larger than the other three species and also has a bill which is disproportionately heavier, suggesting that it may take different food.

Estrilda nigriloris (25)

Chapin, **4** : 550. Schouteden, **9** : 414.

Found only on the banks of the Lualaba River near Lake Upemba (in the Katanga), and in swampy plains to east and west of the lake. The total area it inhabits may not exceed 1,000 sq. miles.

E. nigriloris has sometimes been treated as a subspecies of *E. astrild* or as merely a colour phase, in which the red patch on the lores and round the eye has been replaced by black. However *nigriloris* has a bill appreciably smaller and the facial patch more restricted than in any race of *astrild*. Also, its whole plumage is more suffused with pink than in the local, Katanga, race *E. a. cavendishi* though similar in this respect to *E. a. angolensis*. Although *E. astrild* is widespread over most of Africa, no specimens have been collected within the area of *nigriloris*, the nearest being from Masombwe, 70 miles east of Lake Upemba. The two forms must provisionally be regarded as allopatric, but the differences between them seem to us more than subspecific and provisionally we regard *nigriloris* as a species, as did Chapin when he described the bird. We regard *nigriloris* as forming a superspecies with *astrild*.

Estrilda cinderella or ***thomensis*** (16)

Shelley, 1905, *Birds of Africa*, **4** : 220. Chapin, **4** : 527. Da Rosa Pinto, 1960, *Bol. Cult. Mus. Angola*, **2** : 15.

The type of *cinderella* was collected in 1905 at " Deep Sloot ", Angola (about 13° S., 13° 50′ E.), near Chingoroi, in the escarpment country above the coastal plain. Two other specimens have now been reported by da Rosa Pinto, which are believed to have come from the escarpment near Dondo, about 250 miles north of Chingoroi.

On description the unique type of *E. thomensis* (said to be in Coimbra) could well be identical, but it has not been possible to compare specimens. This type is alleged to have come from São Tomé Island, and Shelley quotes a second specimen from there, but no others are known and recent collectors on São Tomé have failed to find the species. The most striking character of *cinderella* is the bright red on the flanks and lower abdomen. In the opinion of Traylor (*in litt.*), who has examined the type of *cinderella* in New York, it seems in other respects to belong to the *caerulescens-perreini-incana* group, but must be regarded as a species.

Lagonosticta vinacea (1)

Bannerman, **7** : 333.

The type came from the Casamance River, between Gambia and Portuguese Guinea, where the only definite localities appear to be Gunnal (12° 15′ N., 15° 45′ W.) and Bissao, both near the coast. In Gambia it has been collected near the coast and

has also been seen by Cawkell and Moreau in drier country up river, but it seems to be one of the scarcest of the Estrildidae found in the territory. We have been unable to find a record of it north of Gambia, or further inland. On present information the range is only about 150 miles each way, where the ecology is not peculiar.

L. vinacea, in our opinion, forms a superspecies with *L. nigricollis*, which ranges from the interior of Ghana to Darfur and Uganda, and *L. larvata* of the eastern Sudan and Abyssinia. The males of all have black masks but whereas *larvata* has a dull pink wash on the head and breast and *nigricollis*, the geographically intermediate form, is wholly grey except for its tail, *vinacea* has a grey crown, a pink wash on the back and wings, and a beautiful vinaceous pink below. The female of *vinacea* is also distinctive, being washed with salmon pink above and below, unlike the dull buffish-brown of the other two species, of which *nigricollis* is the paler and greyer.

Nesocharis shelleyi (85)

Chapin, **4** : 517. Serle, 1950, *Ibis*, **92** : 637.

The nominate race of this olive-backed waxbill occurs on Fernando Po and Cameroon Mt., and the slightly larger *N. s. bansoensis* on Manenguba Mt. and the Bamenda–Banso highlands, where Serle found it common between 5,000 and 6,000 ft. in the montane forest. The area the species inhabits is probably under 500 miles as it is now unlikely to be found on other highlands in the Cameroons.

It is a matter of opinion whether or not *N. ansorgei* from the eastern Congo mountains and western Uganda should be considered conspecific with *shelleyi*. It is slightly longer in the wing, with a disproportionately longer tail and heavier bill, and has a narrow band of white dividing the black of the head from the olive-yellow of the breast. We regard them as semi-species.

FRINGILLIDAE—Finches

Poliospiza leucoptera (20)

Winterbottom, 1960, *Ibis*, **102** : 390. Skead, 1960, *The Canaries, Seed-eaters and Buntings of Southern Africa* : 84–86.

A dark seed-eater, confined to an area about 130 miles × 100 in the mountains of south-western Cape Province, north to the Cedarberg and east to the Klein Zwartberge near Ladismith, but not the Cape Peninsula. It is closely associated with thick *Protea* growth (which has, however, a much more extensive range).

Although *leucoptera* has no green edges to the wings and only a trace of green on the edges of the tail, in other respects it looks like a small *P. burtoni*, which is a bird of montane bush and forest in the tropics, with its nearest representative 1,400 miles away in Angola. Provisionally, however, we accept them as separate species, possibly forming a superspecies.

Carduelis (Warsanglia) johannis (61)

Williams, 1956, *Ibis*, **98** : 531 ; 1957, *Bull. Brit. Orn. Cl.* **77** : 157.

Found in juniper and euphorbia in the highlands of the Erigavo district, eastern British Somaliland (Warsangli country). Its known range is limited to 1,000 sq. miles

(of which much may not be suitable habitat), and there is no reason to expect that it is much more extensive.

Now that the female and juvenile plumages are known there seems no justification for retaining *johannis* in a monotypic genus, for both indicate closer relationship to the Yemen linnet " *Pseudacanthis* " *yemenensis* than is apparent in the males. In Meinertzhagen's opinion (*Birds of Arabia* : 94) *Pseudacanthis*, hitherto also regarded as a monotypic genus, does not merit distinction from the other linnets, and it is more realistic now to refer both the Yemen and the Somali birds to *Carduelis*, and to combine them in a superspecies.

CLASSIFIED SUMMARY OF THE RARE SPECIES

Taxonomic Categories

1. Members of superspecies, 52.

(a) Semi-species, 17 : *Francolinus ochropectus, Tauraco ruspolii, Bubo vosseleri, Campethera tullbergi, Pycnonotus montanus, Platysteira laticincta, Turdus helleri* (see text), *Sheppardia gabela, Apalis sharpei, Apalis bamendae, Apalis kaboboensis, Prinia leontica, Cinnyris moreaui, Cinnyris loveridgei, Anthreptes rubritorques, Ploceus spekeoides, Nesocharis shelleyi.*

(b) Other members of superspecies, 35 : *Francolinus harwoodi, Francolinus camerunensis, Francolinus swierstrai, Francolinus jacksoni, Eupodotis humilis, Tauraco bannermani, Phodilus prigogenei, Lybius rubrifacies, Lioptilus rufocinctus, Lioptilus gilberti, Picathartes oreas, Phyllastrephus poliocephalus, Phyllastrephus poensis, Melaenornis ardesiaca, Cossypha isabellae, Alethe lowei, Alethe montana, Alethe choloensis, Seicercus herberti, Bradypterus grandis, Bradypterus graueri, Macrosphenus pulitzeri, Hirundo megaensis, Psalidoprocne fuliginosa, Prionops gabela* (see text), *Malaconotus gladiator, Cinnyris rockefelleri, Cyanomitra oritis, Ploceus batesi, Ploceus nigrimentum, Ploceus golandi, Estrilda nigriloris, Lagonosticta vinacea, Poliospiza leucoptera, Carduelis johannis.*

2. Species not members of superspecies, 41.

(a) Species broadly sympatric with what appear to be very close relatives, 10 : *Columba albinucha, Indicator pumilio, Calandrella fringillaris, Pogonocichla swynnertoni, Cinnyricinclus femoralis, Chalcomitra ursulae, Ploceus bannermani, Ploceus castaneiceps, Malimbus ibadanensis, Cryptospiza shelleyi.*

(b) Species believed to be of hybrid origin, 2 : *Lybius chaplini, Turdoides hindei.*

(c) Other species of which close relatives are detectable but which for various reasons are not assigned to superspecies, 10 : *Apus toulsoni, Mirafra williamsi, Anthus sokokensis, Macronyx sharpei, Muscicapa itombwensis* (*lendu*), *Chloropeta gracilirostris, Turdus ludoviciae, Geokichla cameronensis, Malaconotus alius, Estrilda cinderella.*

(d) Very distinct species, without obvious relatives within the genus, 12 : *Caprimulgus binotatus, Calandrella obbiensis* (see text), *Phyllastrephus orostruthus, Cossypha heinrichi, Apalis karamojae, Apalis moreaui, Prinia robertsi, Laniarius atroflavus, Telephorus kupeensis, Anthreptes pallidigaster, Ploceus aureonucha, Ploceus flavipes.*

(e) Species forming monotypic genera, 7 : *Pseudocalyptomena graueri, Namibornis herero, Sceptomycter winifredae, Urolais epichlora* (see text), *Poliolais lopesi* (see text), *Graueria vittata, Zavattariornis stresemanni.*

3. Species of uncertain status, 3 : *Mirafra pulpa, Geokichla oberlaenderi, Anthreptes pujoli.*

Classification by Area and Ecological Association

In classifying the " rare " species by area it is convenient to divide them into three groups as follows : (A) Species of such well-defined habitat that some estimate can be made of the maximum area occupied. (B) Those for which no estimate can be made of the area occupied but for which instead the known geographical range can be quoted. (C) Others for which no estimate can be made of range or area inhabited.

GROUP A. Species classified by area occupied. " M " is appended for montane birds, " MF " for those associated with montane forest, " F " for lowland forest, and " S " for swamp. A species that is known only from widely separated localities is denoted by " (W) ".

Species which do not occupy an area of more than 100 sq. miles ; *Francolinus camerunensis* MF, *Francolinus swierstrai* MF, *Francolinus ochropectus* MF, *Tauraco ruspolii* MF, *Lioptilus gilberti* MF, *Platysteira laticincta* MF, *Turdus helleri* MF, *Alethe montana* MF, *Alethe choloensis* MF, *Pogonocichla swynnertoni* MF, *Bradypterus grandis* S, *Apalis moreaui* MF (W), *Sceptomycter winifredae* MF, *Psalidoprocne fuliginosa* M, *Malaconotus alius* MF, *Telephorus kupeensis* MF, *Cinnyris rockefelleri* M, *Cinnyris moreaui* MF, *Ploceus castaneiceps* S.

Area occupied 100–500 sq. miles : *Tauraco bannermani* MF, *Phyllastrephus orostruthus* MF (W), *Phyllastrephus poliocephalus* MF, *Phyllastrephus poensis* MF, *Pycnonotus montanus* MF, *Chloropeta gracilirostris* S (W), *Cossypha isabellae* MF, *Sheppardia gabela* F, *Seicercus herberti* MF, *Apalis bamendae* MF, *Apalis kaboboensis* MF, *Urolais epichlora* MF, *Poliolais lopesi* MF, *Prinia robertsi* M, *Macrosphenus pulitzeri* F, *Laniarius atroflavus* MF, *Malaconotus gladiator* MF, *Cinnyris loveridgei* MF, *Chalcomitra ursulae* MF, *Cyanomitra oritis* MF, *Anthreptes pallidigaster* F, *Anthreptes rubritorques* MF, *Ploceus bannermani* MF, *Ploceus golandi* F, *Nesocharis shelleyi* MF.

Area occupied exceeds 2,500 sq. miles : *Indicator pumilio* MF (up to 4,000 sq. miles), *Lioptilus rufocinctus* MF (3,000), *Graueria vittata* MF (5,000), *Cinnyricinclus femoralis* MF (5,000).

GROUP B. Species classified by known geographical range. Those marked " * " may be expected to have a wider range.

Species known only from the area of the type locality : *Phodilus prigoginei, Mirafra williamsi, Cossypha heinrichi, Anthreptes pujoli.*

Species with range under 5,000 sq. miles : *Turdoides hindei* (2,500), *Hirundo megaensis* (3,000), *Prionops gabela* (600)*, *Zavattariornis stresemanni* (1,500), *Malimbus ibadanensis* (450)*.

Range 5,000–62,500 sq. miles : *Eupodotis humilis* (20,000)*, *Columba albinucha* (10,000)*, *Lybius rubrifacies* (10,000)*, *Lybius chaplini* (22,500), *Picathartes oreas*

(14,000)*, *Geokichla cameronensis* (10,000)*, *Namibornis herero* (16,000)*, *Ploceus aureonucha* (5,000)*, *Ploceus spekeoides* (15,000)*, *Ploceus flavipes* (3,000)*, *Lagonosticta vinacea* (22,500)*, *Poliospiza leucoptera* (13,000).

Group C. Species for which no estimate can be made of range or area inhabited. *Caprimulgus binotatus* (2 areas 900 miles apart), *Apus toulsoni* (2 localities 250 miles apart), *Mirafra pulpa* (2 loc. 300 miles apart), *Calandrella fringillaris* (2 areas 126 miles apart), *Calandrella obbiensis* (2 loc. 300 miles apart), *Muscicapa lendu/itombwensis* (see text), *Geokichla oberlaenderi* (2 areas 300 miles apart), *Bradypterus grandis* (2 areas 300 miles apart), *Apalis sharpei* (3 loc. in 600 miles), *Apalis karamojae* (2 areas 450 miles apart), *Ploceus batesi* (100 × ? sq. miles), *Ploceus nigrimentum* (2 areas 650 miles apart), *Estrilda cinderella* (see text).

Geographical Distribution

So far as possible, this is shown on the map, the key to which is appended. The rare species are so closely packed in the two areas comprised in respectively the highlands of the Cameroons and those of the eastern Congo that their distribution is shown in separate detail.

DISCUSSION

Background

Discussion is hampered by lack of information about the history of African birds in general and also about the palaeoclimatology of Africa. Bird fossils are almost wholly lacking on the continent and nothing definite is known about the age of existing species. All that can be said is that, on the most recent generalization for birds as a whole, most existing genera had been developed by the Pliocene (Storer, 1960).

Some geographical details of the Ethiopian Region are important, especially those concerned with the mountains. Briefly, lowland evergreen forest fills much of the Congo Basin and extends westwards across West Africa. Vestiges persist on the East African coast. The remainder of the Ethiopian Region is filled with deciduous " savanna ", changing to dry thornbush and semi-desert towards Somaliland and South West Africa. Orographically most of Africa south of the Zambesi is occupied by a great plateau, but in those parts which are high enough to be ecologically montane they are mostly too dry or are deforested. Vestiges of montane forest remain in south-western Angola. Northwards a chain of great highlands runs along the eastern border of the Congo Basin nearly to the boundary of the Sudan. Abyssinia and Kenya each contain a large compact highland block and in addition there are in eastern Africa, mainly in Tanganyika and Nyasaland, a number of mountains capped with forest and stringently isolated from each other by low dry country. West Africa (west of the Cameroons) shows nothing comparable. At the head of the Gulf of Guinea, and separated by over 1,200 miles of lowland from any of the mountains just mentioned, stands Mt. Cameroon and the compact archipelago of neighbouring mountains ; but in the great extent of the continent to the west of the Cameroons hardly any land reaches the requisite height and no typical montane biome seems to be produced.

Although the Ethiopian Region has not been subjected to any important dissection by the sea in relevant geological time, it has undergone repeated and considerable fluctuations in climate, even in the vicinity of the Equator, especially during the Pleistocene. Geological evidence has been provided for the expansion and contraction of East African lakes and glaciers, for example, and of the Kalahari Sands, especially towards the lower Congo ; but the size of the area affected by each of the changes thus documented and the degree to which they were contemporaneous are still matters for discussion. Moreover, some of the major features of the African landscape, its mountains and lakes, took on their present size and form only late in the Pliocene or in the Pleistocene—that is, to a great extent in the course of the last one million years or so. Apart from such geological evidence, the present distribution of plants and birds in tropical Africa leads to several postulates about conditions in the geologically recent past (summarized by Moreau, in press). In particular, there can be little doubt that at some period (or periods) the montane evergreen forest had a wider distribution, linking the present isolated patches in eastern Africa, the Cameroons and Angola, though probably not those of Abyssinia. For this to occur the climate must have been much cooler and wetter than it is at present over vast areas, though not necessarily over all of them at once. It seems also that lowland forest must for a time have extended from the Congo Basin to the East African coast, which would require in the intervening country a wetter, more equable and in part warmer climate than rules there at present ; that the gap dividing the Upper and Lower Guinea forests must have been in Nigeria rather than where it is now ; and perhaps that at least a corridor of dry conditions joined the semi-arid country north of the Equator with that to the south. These postulates imply a succession of climatic changes that, while less catastrophic than those involved in the Pleistocene glacial vicissitudes of the Holarctic, must have contributed greatly to the evolution of African plants and animals.

It may be added that the distributional picture, with which ornithologists have up to now been dealing in tropical Africa, is on the whole believed not to have been affected, directly or indirectly, by human activity so seriously that any appreciable number of species have become extinct. But many species, and especially nearly all those confined to montane forests, have had their areas reduced since the emergence of agricultural man. Prior to his advent nearly all the rare species for which an area of occupation is estimated in the preceding section would have had a larger one, though still judging from the orography, far within the spatial limitations of this study.

Finally, before embarking on detailed discussion, it is worth emphasizing that the examples on which it is based are extremes, and that a large number of birds of limited or peculiar distribution fail in varying degrees to come within the arbitrary limits we set (see especially those listed in the Appendix).

The Ecological and Geographical Distribution of the Rare Birds

As shown earlier in this paper, over half the rare species belong to montane islands, especially to montane forest. This, of all habitats, is the one least likely to be

disturbed in geographical position, whatever the climatic changes of the area as a whole. A shift in the location of the equatorial rainbelt, and consequently of the belts of savanna climate, or a period of reduced rainfall, can cause a wholesale replacement of habitat and consequently of avifauna over a wide area of country—as, for example, when the Kalahari sands advanced north to the lower Congo River. But the effect on an area of montane forest will be merely to raise or lower its boundaries, with consequnent change in the area of the ecological island it represents, but not its elimination except where the montane area is of critically low altitude.

As will be seen from the map, the rare species are for the most part concentrated into two groups :

(1) The forests on the mountains at the head of the Gulf of Guinea. Of these Mt. Cameroon and Manenguba are volcanoes, the former recently active, while the other mountains are of granite, gneiss and syenite ; but the avifaunas of the mountains do not show any general differences correlated with their geology (see especially data in Serle, *Ibis*, 1950 : 346–347 and Serle, *Ibis*, 1954 : 48).

(2) The forested mountains along the Rift Valley from Lake Albert to Lake Tanganyika. Again, the great geological differences between the active Kivu volcanoes and the ancient crystalline mountains, especially Ruwenzori, are not clearly reflected in the avifaunas. It may be mentioned that to the " rare " species mapped for this central chain of forests could be added some other species that fail to qualify only because, with outlying populations as far north as Lake Edward and as far south as Mt. Kabobo, overlooking the north-west of Lake Tanganyika, their north-to-south extension exceeds our 250-mile limit. Among such species are *Tauraco* (*Ruwenzorornis*) *johnstoni*, *Hemitesia neumanni*, *Coracina graueri* and *Prionops alberti*.

In East Africa there are several rare forest species on relatively small non-volcanic mountains in Tanganyika and just over the Kenya border, but none confined to the greatest of African mountains, the volcanic Kilimanjaro, only one on the numerous (non-volcanic) island mountains of Nyasaland and the contiguous part of Portuguese East Africa, and only two associated with the forest of the Kenya Highlands (one of those also on Kilimanjaro). This situation to some extent finds a parallel in the vegetation, for the forests on some of the small crystalline mountains of Tanganyika are particularly rich in endemic plants.

Apart from the montane forest birds, concentrations of rarities are found, though on a smaller scale, in western Angola and in the relict East African coastal forests. In Angola it has been postulated (Hall, 1960*b*) that the zone along and below the western escarpment has, owing to its proximity to the sea, been less affected by climatic changes than the interior of the country and consequently has served as a refuge for communities intolerant of drought. This is essentially the same argument as that advanced above to account for persistence of individual mountain forests, and to some extent it probably applies to the East African coastal area also.

The group of three rare species in southern Abyssinia is of particular interest because two of them, *Zavattariornis* and *Hirundo megaensis*, are confined to an area of open country that does not seem to be an ecological island. The Abyssinian plateau as a whole, which is mostly much higher than the area in question, certainly

possesses some characteristic species, which caused Chapin (1 : 90) to designate the Abyssinian Highland as a faunal district. Its area is however too great for the characteristic species to qualify as " rare " for the present purpose, and the point about the three under discussion is that they are, for no apparent reason, confined to one and the same small part in the south of the Abyssinian Highland district. Three other species are associated with juniper forest in Somalia, two of which, *Turdus ludoviciae* and *Carduelis johannis* have some affinities with Palaearctic species.

There are two very large areas on the map with exceptional sparsity of rare species, West Africa (west of the Cameroons) and South Africa (south of the Zambesi). The West African paucity is relieved only by *Anthreptes pujoli*, of which nothing is known except the type, *Lagonosticta vinacea*, which is associated with an apparently unspecialized deciduous woodland at the western extremity of the continent, and *Prinia leontica*, which seems to be dependent on submontane conditions in one of the only two areas where these occur in the vast extent of Africa west of the Cameroons. This whole area is indeed peculiarly devoid of barriers that isolate populations, except that the lowland forest is interrupted by the dry belt between Nigeria and Ghana. However, although the isolated " Upper Guinea " forest extending from Ghana to Sierra Leone, and with outliers as far west as Portuguese Guinea, has several endemic species, none is so restricted within it as to qualify as " rare " for the present purpose.

The rare species in southern Africa (south of the Zambesi) are few and ecologically heterogeneous, although two, *Prinia robertsi* and *Pogonocichla swynnertoni*, are confined to the elevated eastern edge of the Southern Rhodesian plateau. Others might have been expected in the mountains further to the south and in the relict forests of Zululand, Natal and the coastal belt of the Cape Province. In fact, several species have a somewhat limited range within the winter-rainfall area of the Cape Province, where endemism in the peculiarly rich flora is very high indeed, but only one bird, *Poliospiza leucoptera* (associated with proteas, not with forest), has its range sufficiently restricted for it to be classed here as rare. There are also species other than *Namibornis herero* endemic to the drier parts of South West Africa that have a range outside our limits.

Finally, it may be noted that although the map shows a group of rare species in the lowland forest of the north-eastern Congo, they are birds that we think might well have a more extensive range.

The Evolutionary Status of the Rare Birds

Of the 96 rare birds seven are so peculiar that they are accepted as monotypic genera. They represent the other extreme on the evolutionary scale from the 17 semi-species which on average are presumably the youngest of all the groups under consideration. Of the 89 species not assigned to monotypic genera, 52 are members of superspecies and the proportion is even higher, 43 out of 60, if the 29 birds of uncertain range (group C and part of group B in the " Classification by area ") are omitted. Ten more species may comparatively recently (on the geological time-scale) have passed through the stage of being members of superspecies; their nearest relatives are obvious but they are broadly sympatric with them (see further

discussion below). In these cases presumably after acquiring reproductive isolation one species has invaded the territory of its relative.

The extent to which species that are or have been members of superspecies bulk in the list of rare species is significant. In conjunction with the prevalence of montane birds among the rarities, it emphasizes the importance the numerous isolated montane areas scattered over tropical Africa have had in the evolution of species. Perhaps the most remarkable example is in the francolins, where a montane forest superspecies has " rare " representatives in the Cameroons, Angola, French Somaliland and Kenya. Such birds are indicators of past extension of the parent stock on a vast scale, but unless after they evolved to specific status they occupied larger areas than they do now they are not in the technical sense relicts.

The problem of how far each of the rare species should be regarded as relict or emergent is in fact relative. There would be a strong case for regarding a species as emergent if it appeared to be adapted to some peculiarity of the area to which it is limited, but of such birds there seem, in our present state of knowledge, to be no cogent examples. Failing this, the species with the best claim to be regarded as emergent are those believed to be of hybrid origin, namely, the barbet *Lybius chaplini*, with putative parents *L. torquatus* and *L. leucocephalus*, and the babbler *Turdoides hindei*, with putative parents *T. hypoleuca* and *T. leucopygia* or *melanops*. Although only the first-named of their putative parents are now present in the areas of *L. chaplini* and *T. hindei*, this does not invalidate the hypothesis of their origin. On the contrary, since natural selection and competition normally militate against the successful development of a hybrid species it can be argued that it is most likely to succeed where one parent species overwhelms a small population of the other, which has perhaps been separated from the main body of its species in the course of ecological fluctuations. The numerical inferiority of such a small population, with the resultant limited choice of mates, could lead to interbreeding with the hybrid offspring and the eventual elimination of one parent species in its pure form within the area concerned. At the same time the hybrids would need to be sufficiently well adapted to compete successfully with the other, surviving, parent population. This may have occurred with the two species under discussion ; and whereas *Turdoides hindei* shows the instability of colour and pattern associated with hybrid swarms, *Lybius chaplini* does not, and hence is presumably the older of the two.

Several birds might be cited as probably owing their present restricted range to interspecific competition. Perhaps the clearest case is that of the wattled-eyed flycatcher *Platysteira laticincta*. It is confined to a few square miles of forest in the highest part of the Bamenda–Banso highlands, while forest below 5,000 ft. there (and on neighbouring mountains up to 6,500 ft.) is occupied by *Platysteira cyanea*. It seems impossible that the Bamenda–Banso highlands, which form a continuous block, should ever have provided the degree of isolation necessary for *Platysteira* stock to differentiate there to specific level and the probability is that *laticincta* is making its last stand on the tops against invading *cyanea*. The long-claw *Macronyx sharpei* on the upper grasslands of the Kenya Highlands may be in a closely similar position, islanded among the low-level and geographically more widespread *M. croceus*. A less clear case is that of the bank-swallow *Psalidoprocne fuliginosa*, which is known

only from Fernando Po and Cameroon Mt., its place on neighbouring mountains being taken (as high as 9,000 ft.) by *P. petiti*. This is otherwise a lowland bird, and hence not a typical member of the montane avifauna. It seems possible that *fuliginosa* occupied all the mountains of the geographically compact group in the Cameroons but has been progressively eliminated on the mainland by a rising tide of adaptable *P. petiti* except on Mt. Cameroon itself. The greater height of this might give *fuliginosa* a stronghold in the upper levels, with the backing of which its population can withstand *petiti*.

Such cases as *Phyllastrephus orostruthus*, known only from two montane forests 700 miles apart (and rare in both), are almost certainly due to the elimination of intermediate stations ; and the state of at least some of the species, such as *Malaconotus alius*, confined to a single station, is likely to be due to exaggeration of the same process. As an illustration of an earlier stage *Apalis chariessa* may be cited. It is flourishing in a number of forests round the south end of Lake Nyasa ; it is known from one locality nearly 600 miles to the north, at the foot of the Uluguru Mts. of central Tanganyika ; and it was first discovered over 80 years ago 300 miles further north still, on the Tana River, in Kenya, in which country it has not been reported since.

A special situation arises in the case of those rare species which in most or all of their very limited ranges are found co-existing with what appear to be their nearest relatives, especially the bush-robin *Pogonocichla swynnertoni* in Southern Rhodesia with *P. stellata*, the starling *Cinnyricinclus femoralis* in Kenya with *C. sharpii*, the sunbird *Cinnyris rockefelleri* with *C. regius* in the mountains of the south-eastern Congo Basin, the weaver *Ploceus castaneiceps* with *P. aureoflavus* and the estrildine weaver *Cryptospiza shelleyi* with the other three species of the genus on Ruwenzori. Clearly, in each of these cases the species concerned must have evolved in isolation from common stock and at the penultimate stage of their history they formed a superspecies. Then, having attained inherent reproductive isolation, one or more forms invaded the range of another. Such situations must produce a threat to the continued existence of the invaded species if the two are in direct competition, unless local segregation can take place as in the case of the *Platysteira* spp. cited above. On the other hand if the species concerned adapt themselves to sufficiently different ecological requirements they could co-exist indefinitely. Too little is known of the habits of any of the birds quoted as examples of this situation to assess their field relationships, but in fact it is probable that the co-existence of the *Pogonocichla* species has been prolonged. The widespread *stellata* has differentiated subspecifically both to the north and to the south of the *swynnertoni* station and for geographical reasons it is not likely to have accomplished this without having occupied the *swynnertoni* station in the process of its expansion.

A much older relict status is probable for those rare birds which have no close relatives in Africa, whether a bird with no obvious relative in its genus, or a bird forming a monotypic genus, or a bird forming a superspecies with one in another zoological region. It is the last two categories for which the longest period of relict status may be postulated. Examples are *Phodilus prigoginei* and *Pseudocalyptomena graueri*, both birds of montane forest on the eastern edge of the Congo Basin (and

presumably very sedentary), which have their nearest relatives in Asia. (Other cases are *Hemitesia neumanni*, from the same mountains, but with a narrow range exceeding from north to south our limitation of 250 miles, and probably also "*Apalis*" *moreaui*, "*Artisornis*" *metopias* and *Poliolais lopesi*—see discussion in Systematic List above.) Unless the connection of these species with evergreen forest has developed only late in their history, which is unlikely, they must have been sundered from their Asiatic relatives ever since southern Arabia ceased to carry forest ; and this can hardly be more recent than the early Pliocene (Moreau, 1952 : 905).

Another group of rare species, the relict status of which is probably ancient, are those accepted as monotypic genera. Two of these are even difficult to place in a family or subfamily. *Graueria* has been ascribed to the bulbuls and the warblers, while the babblers have also been considered ; *Namibornis* to the flycatchers and the thrushes. Other rare species have been the subject of similar uncertainty—*Alethe lowei, Alethe montana, Sheppardia gabela, Macrosphenus pulitzeri, Chloropeta gracilirostris* and *Picathartes oreas* (the last three along with their congeners). It seems probable that these birds, as well as the rare monotypic genera, date from a comparatively early stage in the evolution of the passerines.

The processes that have reduced the rare species to their present straits have no doubt been various, with competition and ecological fluctuation the most important. They are particularly difficult to envisage for *Zavattariornis* and *Hirundo megaensis*, which occupy much the same area of open country in southern Abyssinia, and one without obvious ecological distinction. In Angola several species seem to have suffered more than usual from recent human activity in combination with ecological fluctuation (Hall, 1960*b*).

The Systematic Distribution of the Rare Birds

The birds qualifying as rare by our criteria are very unevenly distributed from the systematic point of view, only seven out of over 600 species of non-passerine landbirds, compared with 80 out of less than 1,000 passerines—about 3% against 8%. The disproportion is even more marked when allowance is made for the fact that five of the 17 non-passerines are francolins, four of them in one superspecies.

To some extent the difference between the percentages may be accounted for by the fact that on the whole the non-passerine birds are much bigger and with bigger individual ranges, so that a numerically small population of some species in general occupies a relatively large area. (The francolins are exceptional since they appear to be unusually sedentary.) Moreover, more than half the rare species are associated with montane ecological islands, and especially with montane forest, a habitat in which most of the passerine families are represented and most of the non-passerine are not.

Within the passerines themselves, the proportions of rare species vary much between the families and subfamilies that are best represented, as follows : Muscicapinae 5% (four out of about 87 species), Turdinae 14% (12/86), Sylviinae 13% (16/127), Nectariniidae 12% (8/64), Ploceidae 11% (9/81) and Estrildidae 6% (5/78). But if we omit the species listed in the classified summary as likely to have a more

extensive range than at present known, the highest proportion is in the Sylviinae and the Nectariniidae, with about 10% each, while all the others are reduced to 4 or 5%. The difference could mean that the warblers and the sunbirds show an exceptional tendency to differentiate when in isolation ; and in fact the rare species of warblers, though not notably those of sunbirds, include an exceptionally high proportion that are members of superspecies.

Estimates of Surviving Populations

Given approximate areas inhabited, some idea can be obtained of the number of individual birds existing in some of the rare species. Areas are more precise for montane forest birds than for others, but no censuses on tropical mountains exist. However, in temperate forests of various types the density of all species combined only very exceptionally reaches 10 adult birds to the acre (equivalent to about 6,000 to the sq. mile) and in North America does not exceed six (Lack, 1937 ; Mayfield, 1960). In montane forest in the tropics the number of species may be about 40 (examples in Chapin, **1** : 252 ; Moreau, 1935, *J. Linn. Soc. London*, **39** : 285–293 ; Serle, 1950, *Ibis* : 346). If the density of birds in the African montane forests is not strikingly different from that in the temperate forests (and a little personal experience gives no reason to suppose that it is) density of each tropical montane species would on the average be about 150 adults to the square mile. On that basis there are several African species, *Francolinus ochropectus, Tauraco ruspolii, Turdus helleri* and *Telephorus kupeensis*, the total populations of which are likely to be less than 2,000. More than a dozen others confined to not more than 100 sq. miles might be expected to have total populations below 20,000. In fact, these estimates are very likely too generous, on the analogy of Kirtland's Warbler *Dendroica kirtlandii* in the U.S.A., a species comparable to the rarest African birds but one to which much attention has been directed. Its breeding range lies in an area of 85 miles by 100 which contains much of its exclusive breeding habitat (*Pinus banksiana*). However the bird cannot be found at all in much of the apparently suitable country and after careful census work it is doubtful whether the population reaches 1,000 adult birds (Mayfield, 1960)—i.e. an average of less than one bird to 8 sq. miles of its geographical range. This case is also interesting because the limitation of numbers seems not to be a consequence of human activities, but nest parasitization (by cowbirds) may be critical.

In sum it may be said that there are nearly a score of African species which are likely to consist of at most a few thousand individuals and some that may count no more than a few hundred.

Comparison with Other Zoological Regions

We have seen that in the Ethiopian Region nearly 100 species of birds qualify as " rare " ; and of these perhaps as many as 70 may not lose that status as a result of further collecting. It is unfortunate that we are not in a position to make comparisons with the other two tropical zoological regions, the Oriental and the South American—these areas would need the same kind of investigation as we have under-

taken in the present paper for Africa, and for that we do not possess the necessary local knowledge; but direct comparisons with the Palaearctic, the Nearctic and the Australian Regions are possible.

The Palaearctic Region is nearly twice the size of the Ethiopian, but with only two-thirds as many species, about 1,100. On the latest lists (see especially Vaurie, 1959) less than 20 species have ranges restricted within our limits. A point in which they resemble the Africa rarities is that none of them seem to be long-distance migrants. It is remarkable that of the 20 species the western Palaearctic seems able to claim only a single one, *Serinus syriacus* of the mountains in Syria and the Lebanon. Other western species, Moussier's Redstart *Diploötocus* and the Olivetree Warbler *Sylvia olivetorum*, which we are accustomed to think of as uncommonly restricted in range, considerably exceed the 250-mile limit to which we have been working, and so does the Caucasian endemic *Lyrurus mlokosiewiczi*. The remaining " rare " species of the Palaearctic are nearly all Far Eastern and most of them from the semi-deserts and mountains around the borders of China and Tibet. (Of some of these the ranges may well be extended by further exploration.) In the other great focus of endemics, along the Himalayas, hardly any fail greatly to exceed 250 miles in their east-to-west extension. Mention should however be made of one species, *Acrocephalus orinus*, from the upper Sutlej, near Simla, which seems to be unique among Palaearctic passerine species in being known only from the type specimen.

The contrast in respect of rare species between the Palaearctic and Ethiopian Regions is certainly very striking, but so also is that between the Western Palaearctic and the Eastern. We should be inclined to suggest that this may be the result of the different history of the two areas in the Pleistocene. During the glaciations Europe and Asia Minor underwent a much greater change compared with the interglacials and the present than the Eastern Palaearctic, because the latter did not suffer from an immense extension of the ice-cap. Disturbance of the life-zones would have been far less and so consequently the opportunities for widespread alterations in range and for extinction.

The Nearctic is about the size of the Ethiopian Region, with barely half as many species of birds (750). In Canada and the United States there are, it appears, only about nine species that have ranges restricted within our limits, restricted that is in range and/or in numbers without recent human intervention being mainly responsible. As Traylor has remarked (*in litt.*), nearly all of them appear to be " representative species ", i.e. members of superspecies, but in other respects they are very diverse. Three of them belong to the subtropical promontories, Lower California and Florida, obvious refuges. Three of them, Ross's Goose and two limicolines, are birds of the arctic north-west (a group for which there is no parallel in the Palaearctic). Two of these, together with Kirtland's Warbler, are long-distance migrants, a type of bird not represented in the other zoological regions. (For a discussion of " Migratory birds of relict distribution " see Amadon, 1953.)

Finally, thanks to Keast (*in litt.*) it is possible to discuss also Australia, a continent less than half the size of the Ethiopian Region, and with barely one-third as many species of birds (520). With its post-Pleistocene crisis of drought (Keast, 1959) Australia has had a climatic history almost as catastrophic as the Palaearctic and the

Nearctic during the Pleistocene and far more so than the Ethiopian Region as a whole. Keast tells us that a dozen Australian birds, all passerines, would qualify as " rare " by the standards used here. Five of the species, all of different genera and indeed three of them monotypic, are confined to parts of the Cairns–Atherton rain-forests of Central Queensland, which have a total area of perhaps 2,500 sq. miles. These birds presumably are relicts, like the lyrebird *Menura alberti*, confined to the Macpherson Range of southern Queensland. By contrast, the two semi-species of *Petrophassa* pigeons of the " broken rocky gullies and precipices of the northern Kimberleys ", in north-western Australia, seem to Keast, like the rock warbler *Origma rubecula* of the Sydney sandstone, to have evolved in relation to the peculiar environments where they are found. Finally there are four apparently closely related species of the wide-ranging genus *Amytornis*, each confined to the narrow ecological island of a single valley surrounded by country of a type nowhere occupied by birds of this genus. Three of the species, living in the north in broken rocky country and spinifex, are isolated by " unsuitable savanna grassland " consequent on climatic amelioration ; but the fourth, further south, is surrounded by bare stony desert, the result of deterioration. This illustrates well circumstances in which a superspecies has evolved.

Thus all the four zoological regions examined differ in the nature of their rare species. On present knowledge rare species form a much larger proportion of the Ethiopian avifauna than of the others—6% of species, compared with some 2% in the Palaearctic, 1% in the Nearctic and 2% in the Australian. The percentage will certainly be reduced to a greater degree by further exploration in Africa than in the other continents, but even so there is almost certainly a real difference. This is probably attributable in part to the geography of Africa, with its abundance of well-isolated montane areas, and in part to its climatic history, in which there have been less drastic climatic changes but frequent fluctuations contributing to the formation of ecological islands in which species could develop.

Conclusion

On critical examination there still remain nearly 100 African birds, of status ranging from semi-species to monotypic genus, that are known only from extremely few specimens and/or extremely limited ranges. While some of these rarities will certainly be found by further exploration to be less limited than present knowledge indicates, the ranges of many of them are believed to be definitely known. A large proportion of the latter are confined to ecological islands, montane or swamp. Again and again we have cases in which the European equivalent would be the confinement of an entire species to the Pennines or Exmoor in Britain or the Massif Central in France. Nearly a score of the African rarities are probably represented by no more than a few thousand individuals and some by a few hundreds only. For the most part the extreme rarities seem not to be in immediate danger of extinction, but their existence depends absolutely on the survival of forests, in some cases already little better than vestigial, especially in Angola. Even where such forests are protected by legislation, their future cannot be regarded with equanimity.

Notwithstanding these circumstances, it is not easy to designate many of the rare birds as relicts or the opposite. Some two-thirds of them, often widely sundered from their nearest relatives, are members of superspecies. In such cases, in relation to the postulated former wide extension of the parent stock, each existing population is a relict ; but in its present form of a distinct species (or semi-species) it is a relict only if, since acquiring this identity, its range has decreased. It is probable that as a rule this has not happened, and if not, then the various semi-species may be regarded as typically emergent, and this applies most cogently also to the two species believed to be of hybrid origin. On the other hand, those species which lack evident relatives in Africa must have a long history of what must undoubtedly be classed as relict status.

Compared to other areas for which data are available, the Ethiopian avifauna is remarkable for its prevalence of rare species ; and the explanation of this is in the main not difficult. The African topography provides a wealth of ecological islands that are as conducive to speciation as an extensive marine archipelago. The climatic fluctuations in tropical Africa, though considerable, have been less severe than those of the Nearctic and the Palaearctic, with their vast and obliterative glaciations, and probably than those of Australia, with its widespread crisis of drought. Most of the montane refuges of Africa are likely to have persisted as such ever since they first built up to the necessary height and were colonized by the appropriate vegetation. The antiquity of some of the rare birds that have survived in such surroundings is indicated by the difficulty in placing them in the families and subfamilies that are currently recognized.

SUMMARY

1. The " rare " birds are defined as those species which do not have a range of more than 250 miles in any direction, plus 13 others that merit special consideration since they are known from very few specimens and/or two localities remote from each other.

2. Each of the 96 selected species is discussed separately with respect to its range, ecology and status.

3. The species are summarized in (*a*) taxonomic categories, (*b*) by area and ecological association.

4. It is found that more than half the rare species belong to montane islands, especially montane forest and that there are concentrations of rarities in western Angola and coastal Kenya and Tanganyika, three in both southern Abyssinia and Somalia, but relatively few in West and southern Africa.

5. The selected species contain examples of species in many differing stages of the evolutionary scale, some being apparently relict species, some which co-exist with their nearest relatives, some members of superspecies and some of possibly hybrid origin.

6. Of the 96 rare birds only 17 are non-passerine, including five francolins. Among the passerines the warblers and the sunbirds provide the highest percentage of rare species.

7. About 15–20 of the rare species may consist of less than a few thousand individuals and some of no more than a few hundred.

8. A greater percentage of species rank as " rare " in the Ethiopian Region than in the Nearctic, Palaearctic and Australian.

APPENDIX

This gives all those birds ranked as species with a limited range in the *Systema Avium Aethiopicarum* (or by subsequent describers), which for various reasons we regard as ineligible for our main list. In a few cases it is necessary to explain our reasons, but most of the birds fall into two groups: (1) those (denoted by us as " extra-limital "), whose ranges have, since Sclater wrote, been shown to be more extensive than the arbitrary limits we set for our present purpose; (2) those which have, with what seems to us to be good reason, been rejected as full species by other workers. For both groups we have as a rule thought it sufficient to cite the relevant regional work. Convenience is, we think, served by listing each bird under the generic name used in the reference cited, irrespective of subsequent taxonomic " revision ".

Melanophoyx vinaceigularis = *M. ardesiaca* (Roberts : 24).
Lampribis splendida = *L. o. olivaceus* (Peters, **1** : 134).
Falco fasciinucha, extra-limital (Ostrich, 1958 : 57, *Ibis*, 1956 : 139, 1960 : 132).
Falco pyrrhogaster = *F. vespertinus* (Grote, 1923, *Orn. Mon.* : 38).
Accipiter hilgerti = *A. ovampensis* (Peters, **1** : 225).
Afropavo congensis Chapin, 1936, extra-limital (Prigogine, 1956, *Service des eaux et forêts, Leopoldville* : 1–4).
Agelastes meleagrides, extra-limital (Bannerman, 1953, **1** : 339).
Numida mulondensis Monard, 1934 = *N. mitrata papillosa* (White, 1945, *Ibis* : 467).
Numida zechi = *N. meleagris galeata* (Bannerman, **1** : 347).
Francolinus finschi, extra-limital (Chapin, **4** : 626).
Francolinus ugandensis = *F. icterorhynchus emini* (Praed & Grant, 1935, *Ibis* : 194).
Francolinus nigrosquamatus = *F. clappertoni nigrosquamatus* (Praed & Grant, **1** : 248).
Francolinus tetraoninus = *F. squamatus schuetti* (Praed & Grant, **1** : 280).
Francolinus bourquii Monard, 1934 = *F. coqui subsp.* (White, 1945, *Ibis* : 467).
Francolinus atrifrons Conover, 1930 = *F. castaneicollis atrifrons* (Benson, 1945, *Ibis* : 392).
Francolinus cruzi Themido, 1930 = *F. swierstrai* (White, 1945, *Ibis* : 467).
Pternistes cooperi Roberts, 1947 = *P. swainsoni* × *P. afer* (Hall, in preparation).
Himantornis whitesidei = *H. haematopus whitesidei* (Chapin, **2** : 27).
Coturnicops ayresi, extra-limital (Praed & Grant, **1** : 294).
Coturnicops macmillani = *Sarothrura ayresi* (Praed & Grant, **1** : 304).
Sarothura lugens, extra-limital (Praed & Grant, **1** : 296).
Sarothura antonii = *S. lineata antonii* (Praed & Grant, **1** : 293).
Sarothura modesta Monard, 1949 = *S. lugens* (Mayr, 1957 : 24).
Choriotis adolf-friederici = *Ardeotis kori struthiunculus* (Praed & Grant, **1** : 327).

Neotis burchelli = *N. d. denhami* (*ibid.*).
Neotis heuglinii, extra-limital (Praed & Grant, **1** : 318).
Lophotis savilei = *L. ruficrista savilei* (Praed & Grant, **1** : 324).
Streptopelia hypopyrrhus = *S. lugens hypopyrrhus* (Chapin, **2** : 157).
Streptopelia fulvopectoralis = *S. decipiens fulvopectoralis* (Praed & Grant, **1** : 490).
Pachycoccyx brazzae = *P. audeberti validus* (Chapin, **2** : 185).
Clamator caroli = *C. cafer* (Grant & Praed, 1936, *Bull. Brit. Orn. Cl.* **56** : 124–126).
Centropus epimodis = *C. senegalensis* (Elgood, 1955, *Ibis* : 586).
Centropus fischeri = *C. monachus fischeri* (Praed & Grant, **1** : 515).
Ruwenzorornis johnstoni, extra-limital (Moreau, 1958, *Ibis* : 73).
Agapornis nigrigenis = *A. lilianae nigrigenis* (Moreau, 1948, *Ibis* : 235).
Protockus bradfieldi Roberts, 1930, extra-limital (Roberts : 175).
Lophoceros williaminae de Schauensee, 1931 = *Protockus bradfieldi williaminae* (Roberts : 175).
Scoptelus cavei Macdonald, 1946 = probably *S. aterrimus*. We have examined the type, a juvenile, and confirm that it shows the distinctions from young *aterrimus* that were noted in the original description. We feel, however, that more specimens, especially adults, are required before *cavei* can be accepted as other than a variant.
Tyto cabrae = *Tyto c. capensis* (Peters, **4** : 84).
Otus icterorhynchus, extra-limital (Chapin, **2** : 372).
Otus holerythrus = *Otus icterorhynchus holerythrus* (*ibid.*).
Scotopelia salvago-raggii = *S. peli* (Praed & Grant, **1** : 662).
Scotopelia ussheri, extra-limital (Bannerman, **8** : 266 ; Rand, 1951, *Fieldiana Zool.* **32** : 597).
Caprimulgus keniensis = *C. pectoralis fraenatus* (Praed & Grant, **1** : 684).
Caprimulgus houyi = *Macrodipteryx longipennis* (Bannerman, **3** : 169).
Caprimulgus koesteri Neumann, 1931 = *C. poliocephalus koesteri* (Hall, 1960*a* : 411).
Micropus niansae, extra-limital, on either of the taxonomic interpretations in Lack, 1956, *Ibis* : 48–54.
Micropus myoptilus, extra-limital (Lack, 1956, *Ibis* : 43).
Micropus achimodzi = *Apus myoptilus* (*ibid.*).
Apus batesi, extra-limital (Chapin, **2** : 254).
Apus schoutedeni Prigogine, 1960 = *A. myoptilus schoutedeni*. We have compared a specimen of *A. schoutedeni* with others of *A. m. myoptilus*, *A. m. chapini* and *A. m. poensis* and note its darker coloration and slight differences in wing formula and tail pattern. Prigogine (*in litt.*) tells us that *chapini* and *schoutedeni* have actually been obtained in the same locality, Butokolo, but there is so far no evidence that their breeding ranges overlap. The situation is complicated by the fact that at least *chapini* has definite seasonal movements and probably has two breeding seasons in the year. For the present we hesitate to admit *schoutedeni* as a distinct species.
Telecanthura melanopygia, extra-limital (Chapin, **2** : 445 ; Good, 1952 : 163).
Lybius leucogaster = *L. leucocephalus leucogaster* (see text, p. 325).
Lybius tsanae = *L. u. undatus* (Praed & Grant, **1** : 737).

Tricholaema flavibuccale = *T. melanocephalum flavibuccale* (Praed & Grant, **1** : 713).
Gymnobucco sladeni, extra-limital (Chapin, **2** : 514).
Viridibucco coryphaea, extra-limital (Chapin, **2** : 493)'
Pogonolius schoanus = *P. chrysoconus xanthostictus* (Praed & Grant, **1** : 737).
Indicator meliphilus, extra-limital (Friedmann, 1955, *U.S. Nat. Mus. Bull.* **208** : 224), though not conspecific with *I. exilis* (Chapin, **4** : 633).
Indicator appelator Vincent, 1933 = *I. exilis meliphilus* (Praed & Grant, **1** : 748).
Indicator propinquus Friedmann, 1943 = *I. e. exilis* (Friedmann, 1954, *Ann. Mus. Cong. Zool.* **1** : 23).
Melignomon zenkeri, extra-limital (Chapin, **2** : 538).
Prodotiscus whitei Horniman, 1956 = *Prodotiscus regulus* (White *in litt.*).
Campethera batesi = *C. punctuligera batesi* (Chapin, **2** : 564).
Mesopicus johnstoni = *M. elliotii johnstoni* (Serle, 1952, *Bull. Brit. Orn. Cl.* **72** : 104).
Mirafra malbranti Chapin, 1946 = *M. africana malbranti* (Chapin, **3** : 47).
Mirafra damarensis = *M. apiata damarensis* (Macdonald, 1952, *Ibis* : 624–635).
Mirafra candida Friedmann, 1930 = *M. pulpa* (Hall, 1961, *Bull. Brit. Orn. Cl.* **81** : 108).
Heteromirafra ruddi, extra-limital (Praed & Grant, **2** : 22).
Heteromirafra archeri = *H. ruddi archeri* (*ibid.*).
Heterocorys breviunguis = *Mirafra chuana* (Roberts, 1938, *Ann. Trans. Mus.* **18** : 320), extra-limital (McLachlan & Liversidge, 1957 : 252).
Ammomanes grayi, extra-limital (Niethammer, 1955, *Bonner Zool. Beit.* : 185).
Pseudammomanes ferruginea = *Ammomanes burra* Bangs, 1930—extra-limital (McLachlan & Liversidge, 1957 : 256 & Macdonald, 1957 : 105).
Pseudammomanes erythroclamys = *Certhilauda albescens erythroclamys* (Macdonald, 1953, *Bull. Brit. Mus.* (*Nat. Hist.*) *Zool.* **1** : 345).
Calandrella athensis = *C. rufescens athensis* (Praed & Grant, **2** : 41).
Aethocorys personata, extra-limital (Praed & Grant, **2** : 45).
Anthus leggei = *A. brachyurus leggei* (Praed & Grant, **2** : 72).
Anthus melindae, extra-limital (Jackson, **2** : 822).
Anthus latistriatus = *A. novaeseelandiae cinnamomeus* (White, 1957, *Bull. Brit. Orn. Cl.* **77** : 32).
Anthus hoeschi Stresemann, 1938 = *A. novaeseelandiae bocagei* (*ibid.* : 33) or perhaps *A. n. hoeschi*.
Anthus bannermani Bates, 1930 = *A. similis bannermani* (*ibid* : 31).
Macronyx grimwoodi Benson, 1955, extra-limital (Hall, 1960*a* : 421 ; Ripley, 1960, *Postilla*, **47** : 6).
Turdoides hypoleuca, extra-limital (Praed & Grant, **2** : 92).
Illadopsis stictigula, extra-limital (Praed & Grant, **2** : 301).
Kupeornis chapini Schouteden, 1949, extra-limital (Prigogine, 1960, *Rev. Zool. Bot. Afr.* **61** : 16).
Picathartes gymnocephalus, extra-limital (Glanville, 1954, *Ibis* : 481).
Suaheliornis albigula = *Phyllastrephus debilis albigula* (Praed & Grant, **2** : 127).
Bleda multicolor = *B. syndactyla multicolor* (Chapin, **3** : 179).
Phyllastrephus rabai = *P. debilis rabai* (Praed & Grant, **2** : 128).

Phyllastrephus olivaceo-griseus = *P. flavostriatus olivaceo-griseus* (Chapin, **3** : 175).
Phyllastrephus lorenzi, extra-limital (Schouteden, **6** : 96).
Phyllastrephus baumanni, extra-limital (Bannerman, **4** : 175).
Arizelocichla chlorigula = *A. nigricans chlorigula* (Praed & Grant, **2** : 138).
Eurillas concolor = *E. montanus* (Bannerman, **4** : 184).
Bradornis bafirawari = *B. pallidus bafirawari*. We have examined the type (Brit. Mus.) and two others of the type series (Amer. Mus. Nat. Hist.) from Wajir, and a specimen from Garissa, Tana River (Chic. Nat. Hist. Mus.) which are the only specimens ascribed to *bafirawari* that we have been able to locate. One of the three from Wajir (♂ A.M.N.H. 265307, wing 75, bill 15, tail 56 mm.) has a streaky head and is in fact a specimen of *B. microrhynchus*, being indistinguishable from others collected in the Northern Frontier District of Kenya ; the others are closer to *B. pallidus*, having plain heads, longer finer bills (2 ♂ 17–17·5, 1 ♀ 17 mm.), longer tails (♂ 63–72, ♀ 60 mm.). They are slightly greyer than *pallidus* and have whiter under wing-coverts, and possibly more white in the lores and above the eye, though this is variable. *B. pallidus* is a species sympatric with *microrhynchus* through much of its range but which has not been recorded from the Wajir/Garissa area of north-eastern Kenya, so it seems that *bafirawari* is its geographical representative there and we believe may be considered as a race. Admittedly the wing of *bafirawari* is very short (and the tail disproportionately long) in comparison with that of *B. p. griseus*, the race of central and western Kenya (♂ 78, ♀ 74 against ♂ 94–103, ♀ 93–102) but is not so different from the coastal birds of *B. p. subalaris* (♂ 78–85, ♀ 76–84). *B. p. pallidus* of the Sudan is also a short-winged bird (♂ 77–89, ♀ 75–84) so that the length of the wing in *B. pallidus* seems very variable, and the difference shown by *bafirawari*, combined with the slight colour differences, does not seem sufficient to regard as specific.

We use *B. microrhynchus* in the same sense as did Jackson (1938 : 899) and Friedmann (1937, *Bull. U.S. Nat. Mus.* 153 : 223) since we do not find Grant & Praed (1940, *Ibis* : 518–522) justified in separating the smaller birds ascribed to *microrhynchus* into a distinct and supposedly sympatric species *B. pumilus*.

Dioptrornis semicinctus = *D. fischeri semicinctus* (Chapin, **3** : 608).
Dioptrornis nyikensis = *D. fischeri nyikensis* (*ibid.*).
Dioptrornis toruensis = *D. fischeri toruensis* (*ibid.*).
Myopornis sharpei = *Myopornis böhmi* (Chapin, **3** : 625).
Hyliota slatini = *H. australis slatini* (Chapin, **3** : 599).
Hyliota affinis = *H. v. violacea* (Chapin, **3** : 600).
Hyliota nehrkorni = *H. violacea nehrkorni* (Chapin, **3** : 600).
Batis margaritae Boulton, 1934, extra-limital (Chapin, **3** : 670).
Batis kathleeni White, 1941 = *B. margaritae kathleeni* (Hall, 1960*a* : 424).
Batis reichenowi = *Batis capensis reichenowi* (Praed & Grant, **2** : 201).
Batis ituriensis = probably *B. minima ituriensis* (Rand *et al.*, 1959, *Fieldiana Zool.* **41** : 352).
Batis mystica = *B. m. molitor* (Praed & Grant, **2** : 226).
Batis fratrum, extra-limital (Praed & Grant, **2** : 208).

Batis diops, extra-limital (Schouteden, **6** : 407).
Dyaphorophyia chalybea = *D. blissetti chalybea* (Chapin, **3** : 676).
Tchitrea bedfordi = *T. rufiventer bedfordi* (Chapin, 1948, *Evolution*, **2** : 114).
Turdus nigrilorum = *T. olivaceus nigrilorum* (Chapin, **3** : 584).
Geokichla crossleyi, extra-limital (Chapin, **3** : 578).
Oenanthe albicans = *O. tractrac albicans* (Macdonald, 1957 : 123).
Oenanthe tractrac, extra-limital (*ibid.*).
Oenanthe schalowi = *O. lugubris schalowi* (Praed & Grant, **2** : 268).
Cercomela dubia, extra-limital (Praed & Grant, **2** : 276).
Thamnolea argentata = *T. cinnamomeiventris subrufipennis* (Praed & Grant, **2** : 332).
Bessonornis albigularis = *Dessonornis anomala grotei* (Grant & Praed, 1937, *Bull. Brit. Orn. Cl.* **57** : 79–80 ; Praed & Grant, **2** : 333).
Sheppardia sokokensis = *Sheppardia gunningi sokokensis* (Macdonald, 1940, *Ibis* : 663–671).
Sheppardia bensoni Kinnear 1938=*S. gunningi bensoni* (*ibid.*).
Alethe polioparea = *Malacocincla r. rufipennis* (Chapin, **3** : 215).
Alethe macclounii = *Dessonornis anomala macclounii* (Praed & Grant, **2** : 303).
Alethe sharpei = *Sheppardia sharpei*, extra-limital (Macdonald, 1940, *Ibis* : 668).
Erythropygia hamertoni = *Agrobates galactotes hamertoni* (Praed & Grant, **2** : 358).
Pogonocichla intensa = *P. stellata* subsp. (Chapin, **3** : 511).
Xenocopsychus ansorgei, extra-limital (Chapin, 1948, *Auk*, **65** : 292).
Seicercus laurae Boulton, 1931, extra-limital (Chapin, **3** : 475).
Seicercus laetus, extra-limital (*ibid.*).
Bradypterus altumi = *Sathrocercus m. mariae* (Grant & Praed, 1941, *Ibis* : 453).
Bradypterus usambarae = *Sathrocercus mariae usambarae* (*ibid.* : 454).
Bradypterus roehli = *Sathrocerus mariae usambarae* (*ibid.*).
Bradypterus msiri = *B. baboecala msiri* (*ibid.* : 446).
Bradypterus castaneus = *Sathrocercus cinnamomeus castaneus* (*ibid.* : 452).
Bradypterus barakae = *Sathrocercus lopezi barakae* (*ibid.* : 455).
Bradypterus victorini, extra-limital (McLachlan & Liversidge, 1957 : 324).
Bradypterus sylvaticus, extra-limital (*ibid.* : 323).
Bradypterus bedfordi = *B. baboecala msiri* (Chapin, **3** : 434).
Bradypterus carpalis, extra-limital (Chapin, **3** : 435).
Bradypterus yokanae = *B. carpalis* (*ibid.*).
Bradypterus camerunensis = *B. mariae camerunensis* (White, 1960, *Bull. Brit. Orn. Cl.* **80** : 19).
Calamornis chadensis = *Calamoecetor rufescens chadensis* (Bannerman, 1937, *Ibis* : 296).
Calamornis ansorgei = *Calamoecetor rufescens ansorgei* (*ibid.* : 297).
Calamornis foxi = *Calamoecetor rufescens foxi* (*ibid.*).
Calamornis neglecta = *Calamoecetor leptorhyncha neglecta* (*ibid.* : 300).
Calamornis jacksoni = *Calamoecetor leptorhyncha jacksoni* (*ibid.* : 299).
Calamornis palustris = *Calamoecetor l. leptorhyncha* (*ibid.*).
Calamornis nuerensis = *Calamocichla gracilirostris nuerensis* (Chapin. **3** : 444).
Calamornis cunenensis = *Calamocichla gracilirostris cunenensis* (Chapin, **3** : 442).

Calamonastes cinereus = *C. simplex cinereus* (Grant & Praed, 1942, *Bull. Brit. Orn. Cl.* **62** : 59).
Calamonastes katangae = *C. simplex katangae* (*ibid.* : 60).
Apalis flavigularis, extra-limital (Praed & Grant, **2** : 398).
Apalis argentea Moreau, 1941 = *A. rufogularis argentea*.
Apalis eidos Peters & Loveridge, 1942 = *A. rufogularis eidos*

We consider the two montane forms *eidos*, from Idjwi Islands, Lake Kivu, and *argentea* from Mt. Kungwe, on the eastern side of Lake Tanganyika, to be races of *A. rufogularis*. The one specimen examined of *eidos* can hardly be distinguished from an immature specimen of *A. r. brauni* from Angola, and it seems that in *eidos* the green back and greenish flanks, that are characteristic of young birds in other races, have been retained in adult plumage. In *argentea* the underparts are wholly white in both sexes. Emphasis has been given to the silvery edge to the primaries in this form, but traces of edging are found also in *A. r. angolensis* and *eidos*. The lack of rufous throat in the females of both *eidos* and *argentea* does not seem sufficient reason to consider them specifically distinct from *rufogularis* in view of the variation in throat colour in the males of this polytypic species.

Apalis hardyi = *A. goslingi hardyi* or *A. sharpei* (see text, p. 339).
Apalis schoutedeni Chapin, 1937 = *A. g. goslingi* (probably).

The unique type of *schoutedeni* is a young bird "close to *A. g. goslingi*" (Chapin, **3** : 285). Since *goslingi* is now known from Dundo, north-eastern Angola (Ripley, 1960, *Postilla*, **47** : 7), the type locality of *schoutedeni* lies well within the range of *goslingi* and the likelihood of *schoutedeni* proving a distinct species is remote.

Apalis ruddi, extra-limital (McLachlan & Liversidge, 1957 : 332).
Apalis chariessa, extra-limital (Praed & Grant, **2** : 413).
Apalis chapini = *A. porphyrolaema chapini* (see text, p. 339).
Apalis chirindensis = *A. melanocephala chirindensis* (Smithers *et al.*, 1956 : 119).
Apalis lynesi Vincent, 1933 = *A. flavigularis lynesi* (Praed & Grant, **2** : 399).
Apalis macphersoni Vincent, 1934 = *A. c. chariessa* (Praed & Grant, **2** : 519).
Apalis melanurus, extra-limital (Ripley, 1960, *Postilla*, **47** : 7).
Apalis ruficeps = *Artisornis metopias* (Praed & Grant, **2** : 518).
Eminia cerviniventris, extra-limital (Bannerman, **5** : 101).
Sylvictta chapini Schouteden, 1947 = *S. leucophrys chapini* (Mayr, 1957 : 30).
Sylvietta philippae Williams, 1955, extra-limital (Mayr, *ibid.*).

The specimen referred to by Mayr was collected in the Ain valley, south-east of Burao, British Somaliland.

Eremomela salvadorii, extra-limital (Chapin, **3** : 267).
Hemitesia neumanni, extra-limital (Schouteden, **7** : 235 ; Prigogine, 1960, *Ann. Mus. Roy. Cong. Belg.* **85** : 31).
Cisticola nigriloris, extra-limital (Lynes, 1930, *Ibis* suppl. : 329).
Cisticola pipiens, extra-limital (Chapin, **3** : 359).
Cisticola dambo, extra-limital (Chapin, **3** : 393).
Cisticola carruthersi, extra-limital (Chapin, **3** : 360).

Prinia ansorgei = *P. flavicans ansorgei* (Irwin, 1959, *Bull. Brit. Orn. Cl.* **79** : 127).
Prinia metopias = *Artisornis metopias* or *Orthotomus metopias* (see text, p. 341), extra-limital (Praed & Grant, **2** : 420).
Petrochelidon rufigula, extra-limital (Chapin, **3** : 773).
Petrochelidon fuliginosa, extra-limital (Malbrant & Maclatchy, 1949 : 356).
Phedina brazzae, extra-limital (Chapin, **3** : 742).
Psalidoprocne kösteri Neumann, 1930 = *P. orientalis reichenowi* (Chapin, **3** : 780).
Coracina graueri extra-limital (Schouteden, **6** : 109).
Prionops martensi = *Prionops plumata* subsp. (Chapin, **4** : 96).
Prionops alberti Schouteden, 1933, extra-limital (Schouteden, **8** : 75).
Laniarius alboplagatus = *L. funebris* (Praed & Grant, **2** : 642).
Laniarius erlangeri = *L. aethiopicus erlangeri* (Hall, 1954, *Ibis* : 346).
Laniarius nigerrimus = *L. aethiopicus sublacteus* (*ibid.* and Stresemann, 1947, *Ibis* : 518).
Laniarius fülleborni, extra-limital (Praed & Grant, **2** : 610).
Laniarius niassae Boulton, 1931 = *L. fülleborni* (Meise, 1938 : 175).
Dryoscopus pringlii, extra-limital (Praed & Grant, **2** : 620).
Chlorophoneus nigrithorax = *C. m. multicolor* (Bannerman, **5** : 427).
Chlorophoneus andaryae = *C. sulfureopectus similis* (Praed & Grant, **2** : 643).
Chlorophoneus nigrescens = *C. n. nigrifrons* (Sclater & Moreau, 1933, *Ibis* : 200).
Parus fasciiventer, extra-limital (Chapin, **4** : 99).
Anthoscopus pygmaea Horniman, 1956 = *A. caroli winterbottomi* (Praed & Grant, MS., Birds of the Southern Third of Africa).
Onychognathus gracilirostris = *O. m. morio* (*ibid.*).
Zosterops vaalensis = *Z. pallida vaalensis* (Moreau, 1957, *Bull. B.M. Nat. Hist.* **4** (7) : 383).
Zosterops silvanus Peters & Loveridge, 1935 = *Z. senegalensis silvana* (*ibid.* : 314, 365).
Nectarinia bocagei, extra-limital (Schouteden, 1959, *Rev. Zool. Bot. Afr.* **59** : 326).
Nectarinia purpureiventris, extra-limital (Chapin, **4** : 273).
Nectarinia congensis, extra-limital (Chapin, **4** : 268).
Nectarinia sororia Ripley, 1960, extra-limital—possibly the female of *Nectarinia* (*verticalis*) *bannermani* (Rand & Ripley *in litt.*).
Cinnyris oustaleti, extra-limital (Chapin, **4** : 230).
Cinnyris pembae = *C. chalcomelas pembae*.

Praed & Grant (**2** : 771) give the range as Pemba Island and Lamu. The extension on the mainland at Lamu, within the range of *C. chalcomelas*, is apparently based on two specimens in the British Museum from the Shelley collection. These have no original labels, but the Shelley Museum labels have " Lamu—Kirk " on them. Kirk's " Lamu " collections were made by Africans (*vide History of the Collections in the Natural History Museum*, **2** : 407), and it may be doubted that all the birds actually came from there. If these did not we can regard *pembae* as conspecific with *chalcomelas*, which has an extra-limital range.

Cyanomitra batesi, extra-limital (Chapin, **4** : 206).
Anthreptes yokanae = *A. reichenowi yokanae* (Praed & Grant, **2** : 817).

Gunningia reichenowi = *Anthreptes r. reichenowi*, extra-limital (*ibid.*).
Plocepasser donaldsoni, extra-limital (Praed & Grant, **2** : 866).
Plocepasser rufoscapulatus, extra-limital (Chapin, **4** : 289).
Ploceus duboisi = *P. melanocephalus duboisi* (Chapin, **4** : 340).
Ploceus subpersonatus, extra-limital (Chapin, **4** : 316).
Ploceus olivaceiceps, extra-limital (Praed & Grant, **2** : 920).
Ploceus flavissimus = *P. galbula* (Praed & Grant, **2** : 1052).
Ploceus nicolli Sclater, 1931 = *P. olivaceiceps nicolli* (Moreau, 1960, *Ibis* : 310).
Euplectes zavattarii Moltoni, 1943 = *E. orix pusillus* (Grant & Praed, 1947, *Bull. Brit. Orn. Cl.* **68** : 60).
Notiospiza angolensis, extra-limital (Chapin, **4** : 389).
Anaplectes jubaensis = *A. melanotis jubaensis* (Praed & Grant, **2** : 944).
Drepanoplectes jacksoni, extra-limital (Praed & Grant, **2** : 972).
Parmoptila rubrifrons, extra-limital.

Chapin (**4** : 462) suggests that the forms *rubrifrons* from the Gold Coast and *jamesoni* from the Congo forest may prove to be conspecific with *woodhousei*, which is found in the intervening forests of Nigeria and the Cameroons, and further south ; but that in the absence of specimens showing intermediate characters the differences seem great enough to keep them distinct at present. With this we agree in respect to *woodhousei*, but we believe that in spite of the discontinuous distribution *rubrifrons* and *jamesoni* should be considered conspecific. The types show no differences except that *rubrifrons* is smaller (wing 51 against 56 mm.) and has pale tips to the chestnut feathers of the wing-coverts, nape and sides of the head, which appear speckled.

Cryptospiza jacksoni, extra-limital (Chapin, **4** : 487).
Pirenestes vincenti Benson, 1955 = *P. minor vincenti* (Mayr, 1957 : 33).
Paludipasser uelensis = *Ortygospiza locustella uelensis* (Chapin, **4** : 504).
Paludipasser irisae = *Ortygospiza l. locustella* (Chapin, **4** : 503).
Hypargos margaritatus, extra-limital (McLachlan & Liversidge, 1957 : 448).
Estrilda xanthophrys = *E. troglodytes* (Praed & Grant, **2** : 1053).
Nesocharis ansorgei, extra-limital (Schouteden, **9** : 375).
Hypochaera aenea = *Vidua c. chalybeata* (Friedmann, 1960, *U.S. Nat. Mus. Bull.* **233** : 60).
Hypochaera codringtoni = *Vidua chalybeata codringtoni* (*ibid.* : 61).
Vidua haagneri, probably a hybrid (Smithers *et al.* 1957 : 158).
Serinus citrinipectus Clancey, 1960.

We have examined three males of *citrinipectus* from Panda, Inhambane district, southern Portuguese East Africa, and a number of the aberrant canaries discussed by Stuart Irwin (*Ibis*, 1960 : 503–506) and are in no doubt that they must be considered together, thus giving the " species " an extra-limital range. Irwin believed his highly variable series to be the product of hybridization. Though the three Panda specimens examined show considerable individual variation (not indicated in the original description), the series suggests that at least in that locality the hybrid form has become more stable than in the area from which Irwin's birds came.

Poliospiza flavigula, extra-limital (Praed & Grant, **2** : 1076).
Poliospiza dimidiata = *P. flavigula* (Praed & Grant, **2** : 1086).
Poliospiza collaris = *P. flavigula* (Praed & Grant, **2** : 1086).
Poliospiza pachyrhyncha = *Serinus donaldsoni* (Praed & Grant, **2** : 1086).
Poliospiza whytii = *Serinus striolatus whytii* (Praed & Grant, **2** : 1077).
Linurgus olivaceus, extra-limital (Chapin, **4** : 585).
Linurgus kilimensis = *L. olivaceus kilimensis* (*ibid.*).
Spinus totta, extra-limital (McLachlan & Liversidge, 1957 : 460).
Spinus symonsi = *S. totta symonsi* (*ibid.*).

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Postscript.

Francolinus (*Pternistis*) *rufopictus*

Since this paper was completed further research has shown that the occurrence of *Francolinus rufopictus* in Ruanda cannot be substantiated. The known range of the species is therefore not more than 200 × 150 sq. miles, and *F. rufopictus* qualifies as a " Rare Bird " (see Hall, " The Francolins—a study in speciation ", in preparation).

Lagonosticta vinacea (see page 354).

We have also found a record of *L. vinacea* from Niokolo-Koba Park, Senegal, about 13° N., 13° W. (Dekeyser, 1956, Mem. Inst. Franc. Afr. Noire 48 : 135). This gives the bird a known range of at least 250 miles from west to east and makes it doubtful if its actual range falls within our limits.


5 JUL 1962
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Key to Species plotted on the Map

1. *Lagonosticta vinacea*
2. *Prinia leontica*
3. *Anthreptes pujoli*
4. *Apalis sharpei*
5. *Malimbus thalassinus*
6. *Caprimulgus binotatus*
7. *Picathartes oreas*
8. *Geokichla cameronensis*
9. *Ploceus batesi*
10. *Bradyptenus grandis*
11. *Ploceus nigrimentum*
12. *Apus toulsoni*
13. *Prionops gabela*
14. *Sheppardia gabela*
15. *Cossypha heinrichi*
16. *Estrilda cinderella*
17. *Macrosphenus pulitzeri*
18. *Francolinus swierstrai*
19. *Namibornis herero*
20. *Poliospiza leucoptera*
21. *Calandrella fringillaris*
22. *Pogoniochila swynnertoni.*
23. *Prinia roberisi*
24. *Lybius chaplini*
25. *Estrilda nigriloris*
26. *Chloropeta gracilirostris*
27. *Alethe choloensis*
28. *Phyllastrephus orostruthus*
29. *Apalis moreaui*
30. *Alethe lowei*
31. *Cinnyris moreaui*
32. *Cinnyris loveridgei*
33. *Scepomycter winifredae*
34. *Malaconotus alius*
35. *Anthreptes rubritorques*
36. *Alethe montana*
37. *Bubo vosseleri*
38. *Anthus sokokensis*
39. *Anthreptes pallidigaster*
40. *Ploceus golandi*
41. *Ploceus castaneiceps*
42. *Turdus helleri*
43. *Cinnyricinclus femoralis*
44. *Turdoides hindei.*
45. *Macronyx sharpei*
46. *Francolinus jacksoni*
47. *Lybius rubrifacies*
48. *Ploceus flavipes*
49. *Geokichla oberlaenderi*
50. *Ploceus aureonucha*
51. *Columba albinucha*
52. *Ploceus spekeoides*
53. *Apalis karamojae*
54. *Mirafra pulpa*
55. *Mirafra williamsi*
56. *Hirundo megaensis*
57. *Zavattariornis stresemanni*
58. *Tauraco ruspolii*
59. *Calandrella obbiensis*
60. *Eupodotis humilis*
59. *Calandrella obbiensis*
60. *Eupodotis humilis*
61. *Carduelis johannis.*
62. *Turdus ludoviciae*
63. *Francolinus ochropectus*
64. *Francolinus harwoodi.*

Species of Cameroon Highland Area

	Fernando Po	Cameroon Mountain	Kumpi Hills	Kupé Mountain	Manengiba Mountain	Hanemila/Banso Highlands	Obudu Plateau
65. *Francolinus camerunensis*		×					
66. *Tauraco bannermani*						•	×
67. *Campethera tullbergi*		•	×	×		•	×
68. *Lioptilus gilberti*			×	×			×
69. *Phyllastrephus poliocephalus*		×	×	×			×
70. *Phyllastrephus poensis*	•	×	×	×	•	×	×
71. *Pycnonotus montanus*		×	×		×	•	
72. *Platysteira laticincta*						•	
73. *Cossypha isabellae*		•	×		•	•	×
74. *Saxicerus herberti*	×	•	×	×	•	•	×
75. *Apalis bamendae*						×	
76. *Urolais epichlora*	•	×	×	×	×	•	×
77. *Poliolais lopesi*	•	×	×	×	×		×
78. *Pholidoprocne fuliginosa*	×	×					
79. *Lamprotornis atroflavus*		×			×	•	×
80. *Telophorus kupeensis*				×			
81. *Malaconotus gladiator*		×	×			•	×
82. *Chalcomitra ursulae*	×	×	×				
83. *Cyanomitra orissi*	×	×		×	×	×	
84. *Ploceus bannermani*					×	×	
85. *Neocharis shelleyi*	×	×			×	×	

Species of East Congo Mountain Area

	West of Lake Albert	Ruwenzori	West of Lake Edward	Kivu volcanoes and north-east of L. Kivu	N.W. & west of L. Kivu	East of L. Kivu and the Ruzizi valley	West of Ruzizi valley & N.W. of L. Tanganyika	Mt. Kabobo
86. *Phodilus prigogenei*	×							
87. *Indicator pumilio*			×				×	
88. *Pseudocalyptomena graueri*			×	×	×		×	
89. *Lioptilus rufocinctus*					×		×	×
90. *Muscicapa lendu* *M. stombycnsis*					×		×	×
91. *Melaenornis ardesiaca*			×	×	×			
92. *Bradyptenus graueri*			×	×	×	×		
93. *Apalis kaboboensis*							×	×
94. *Graueria vittata*		×			×	×	×	
95. *Cinnyris rockefelleri*					×	×	×	
96. *Cryptospiza shelleyi*		×	×		×	×